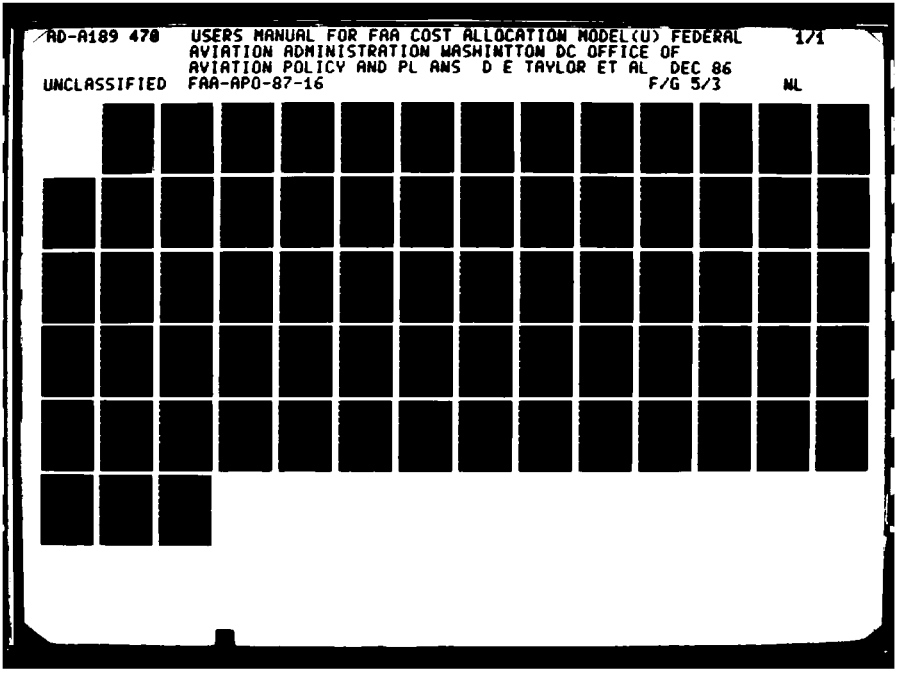
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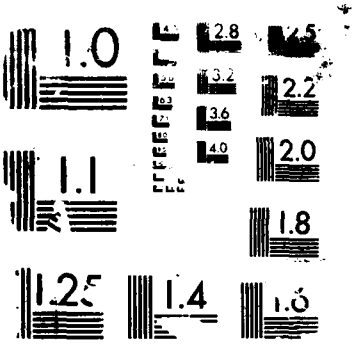

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Users Manual for FAA Cost Allocation Model

FAA-APO-87-16 December 1986

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16. Abstract

This document was prepared under the supervision of the Office of Aviation Policy and Plans of the Federal Aviation Administration (FAA). It provides technical documentation for the FAA's report, "Airport and Airway Costs: Allocation and Recovery in the 1980s," (FAA-APO-87-7).

This volume provides a brief overview of the Cost Allocation Model and instructions on how to use the model. Individual files and data bases comprising the model are also described.

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Section 1.0

USERS MANUAL FOR THE COST ALLOCATION MODEL

The first section of this volume provides a brief overview of the model, and instructions on how to use. Subsequent sections describe each of the files in the model more specifically and document the databases used in assembling this model.

The final page of this section is a quick reference guide to the model.

1.1 Layout of Files

Figure 1.1 shows the layout of the cost allocation files. The files run sequentially from top to bottom. At the points indicated, the flow branches depending on the fiscal year being allocated. The files on the left of the page, specific to the period 1985 through 1992, are part of Future System I while their counterparts on the right-hand side of the page, for the 1993 through 1997 allocations, are in Future System II. The middle files are common to all allocation years. Future Systems I and II are shown as they would run linearly in Figure 1.2 and 1.3 respectively. In addition, these figures describe briefly the functions of the file groups in each system. As noted above, a more detailed description of each of these files and their functions can be found in Section 2.0 of this volume.

Figure 1.1

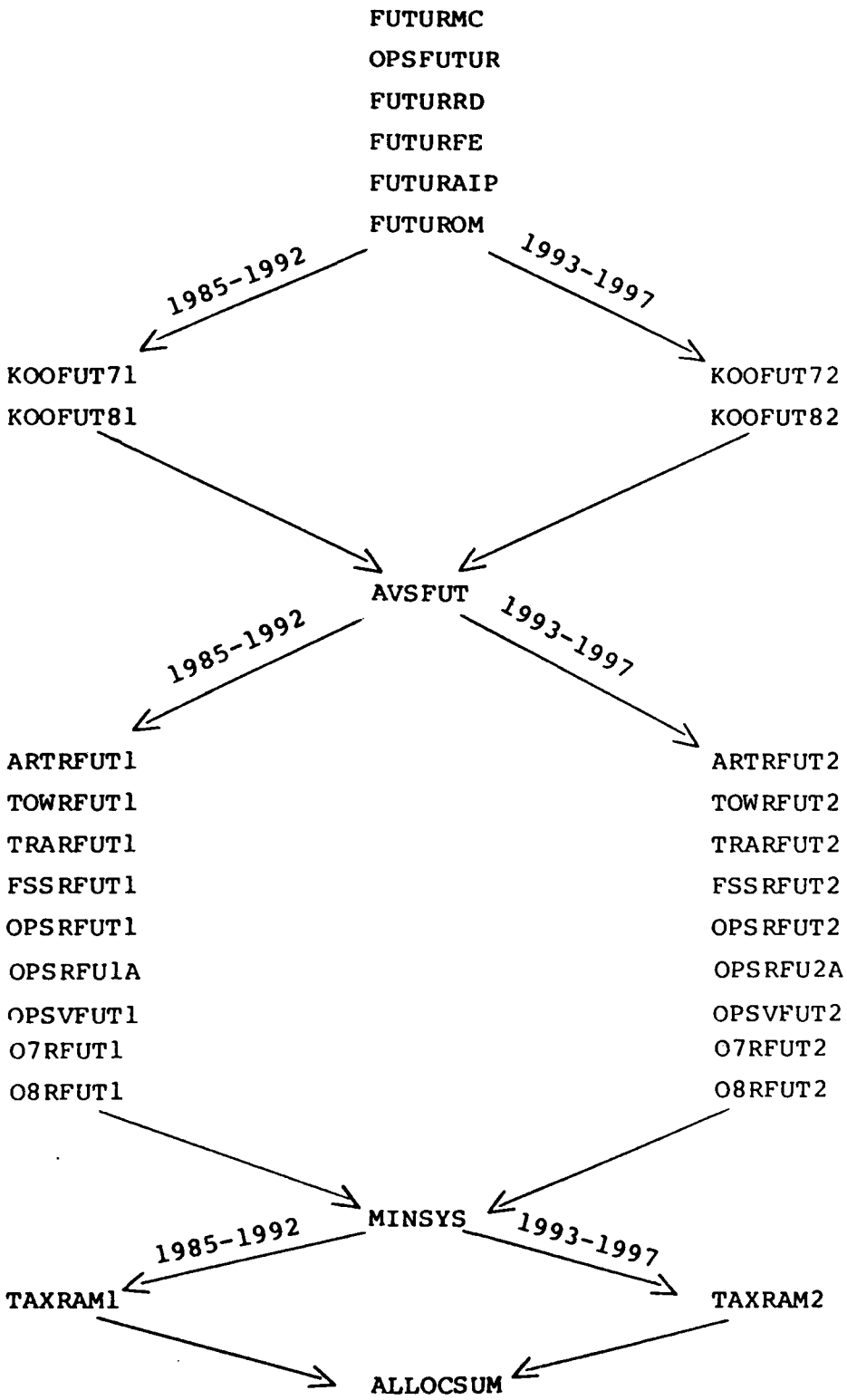

FUTURMC
OPSFUTUR
FUTURRD
FUTURFE
FUTURAIP
FUTUROM
1985-1992
1993-1997
KOOFUT71
KOOFUT81
KOOFUT72
KOOFUT82
AVSFUT
1985-1992
1993-1997
ARTRFUT1
TOWRFUT1
TRARFUT1
FSSRFUT1
OPSRFUT1
OPSRFU1A
OPSVFUT1
O7RFUT1
O8RFUT1
ARTRFUT2
TOWRFUT2
TRARFUT2
FSSRFUT2
OPSRFUT2
OPSRFU2A
OPSVFUT2
O7RFUT2
O8RFUT2
MINSYS
1985-1992
1993-1997
TAXRAM1
TAXRAM2
ALLOCSUM

Figure 1.2

COST ALLOCATION FILES
FUTURE SYSTEM 1
1985-1992

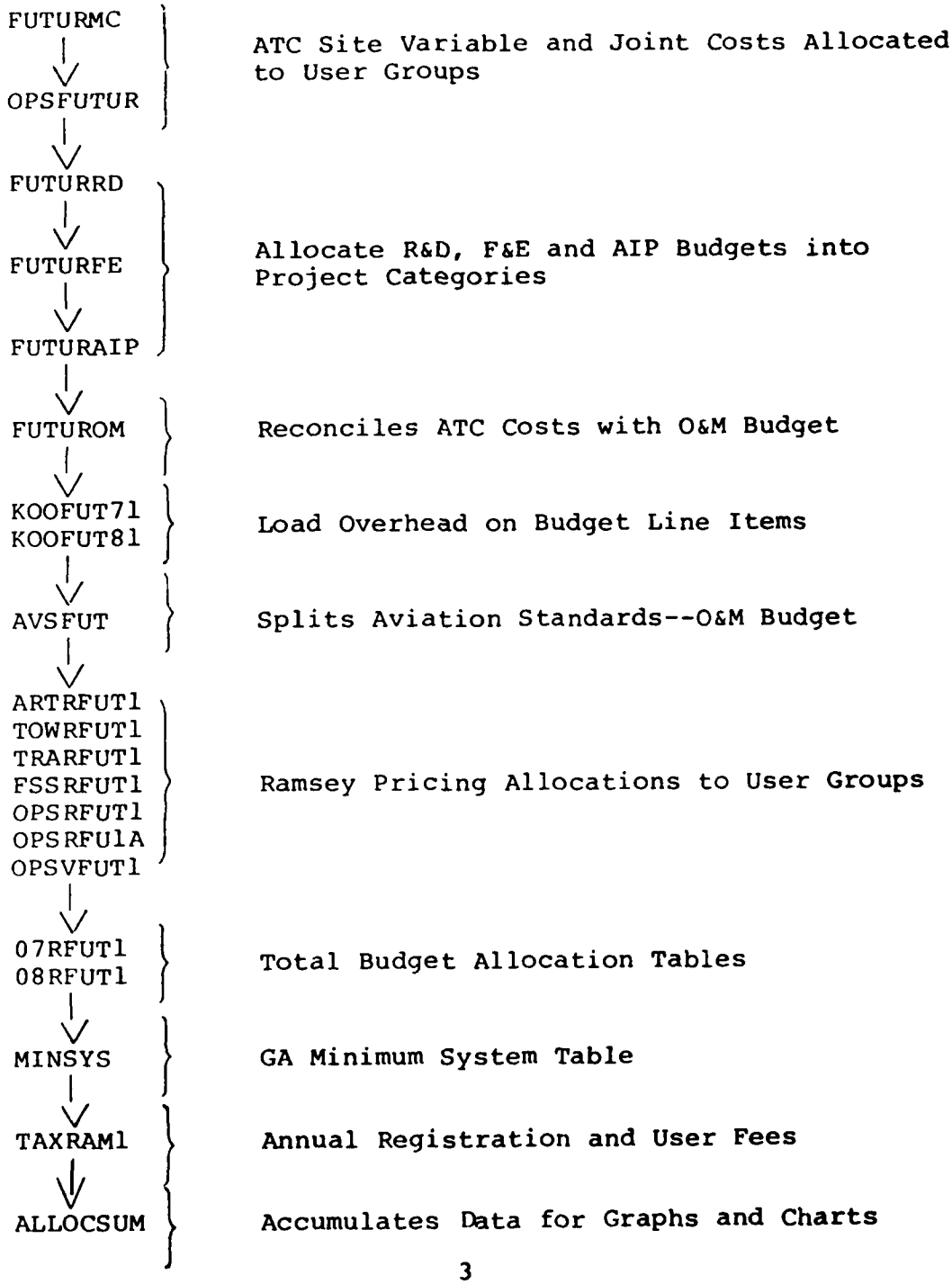
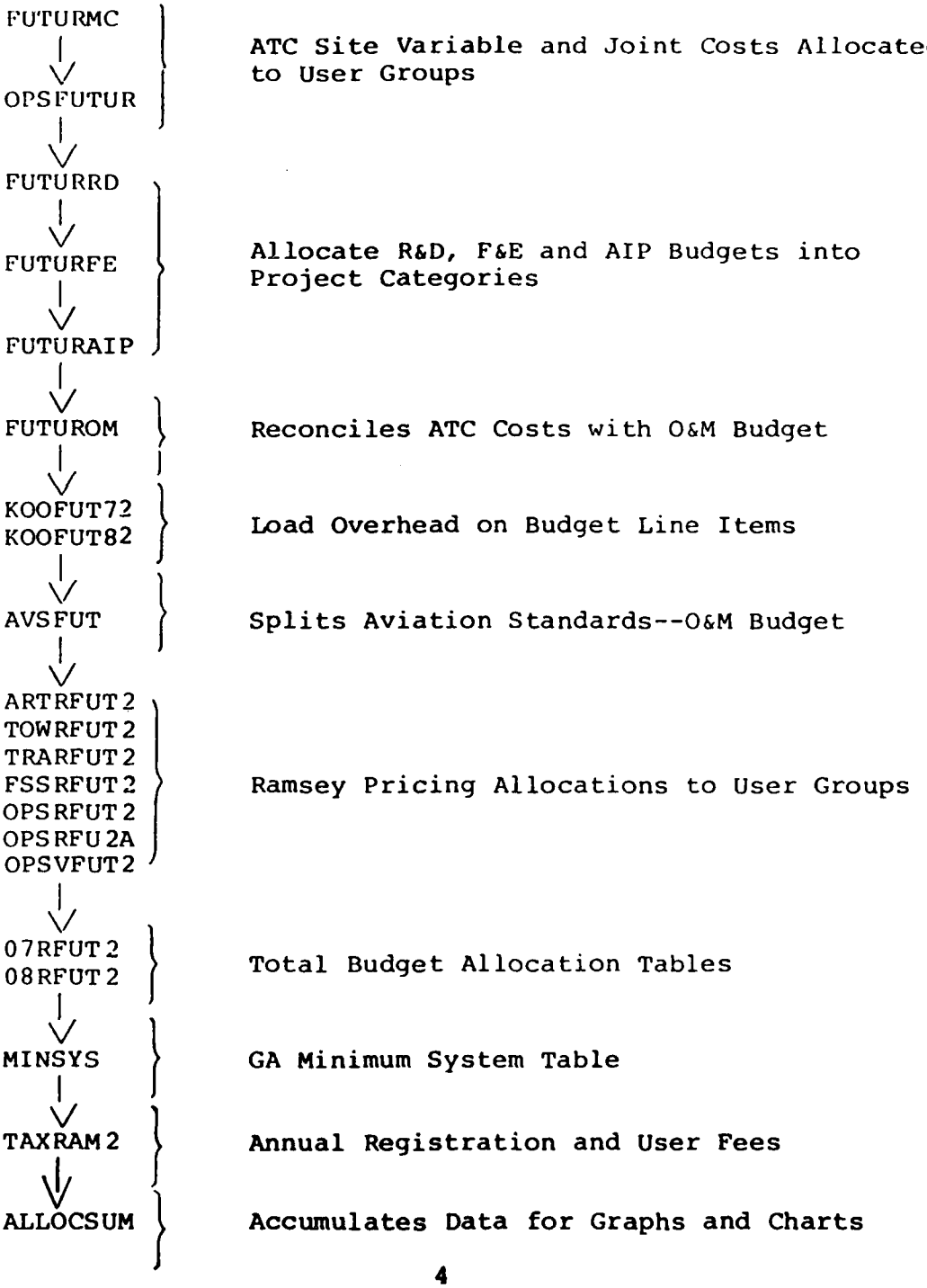


Figure 1.3

COST ALLOCATION FILES
FUTURE SYSTEM 2
1993-1997



1.2 Controlling File

The model itself is controlled completely through the file FUTURMC. In this file one can select:

- o the starting year for the model;
- o the number of years the model will run; and,
- o a whole host of specific variables to be used in the model.

1.3 Variable Options

Table 1.1 lists all of these variables in the order they appear in FUTURMC. This table begins at cell W1 in that file. First, the user must select a beginning year for the model. In the table, it is 1985. In addition, he/she selects the number of years the model should run, in this case 12 years, which is the entire model through 1997. (Note: the model will never go beyond 1997). The remaining variables are grouped according to their relevant budget items, e.g., towers, ARTCCs, TRACONs, R&D, F&E, etc. To change a variable, one simply moves down to that cell and enters the new number. For instance, if one wishes to inflate TRACON costs by 5 percent rather than the 4.64 percent entered, simply move down to that cell, enter .05 and hit return.

1.4 Print Options

FUTURMC also determines what will be printed by the model. Table 1.2 shows the various print options which begin at cell AC1 in FUTURMC. By moving to cell AD1, typing the selected print option and pressing return, one selects the files to be printed

Location: FUTURMC
Cell: W1

Table 1.1

VARIABLE OPTIONS

SYSTEM VARIABLES
07-Aug-86

BUDGET ITEM	FILE	VARIABLE	SETTING
	FUTURMC	FISCAL YEAR	1992
	FUTURMC	MULTIPLE YEAR OPTION (0 YEARS)	1
O&M TOTAL BUDGET	FUTUROM	O&M TOTAL 1985 BUDGET	$2,699,000,000
	FUTUROM	O&M TOTAL 1986 BUDGET	$2,759,000,000
	FUTUROM	O&M TOTAL 1987 BUDGET	$2,814,600,000
	FUTUROM	O&M TOTAL 1988 BUDGET	$3,041,200,000
	FUTUROM	O&M TOTAL 1989 BUDGET	$3,019,200,000
	FUTUROM	O&M TOTAL 1990 BUDGET	$3,036,300,000
	FUTUROM	O&M TOTAL 1991 BUDGET	$3,060,200,000
	FUTUROM	O&M TOTAL 1992 BUDGET	$3,085,200,000
	FUTUROM	O&M INFLATION RATE 1993-97	4.64%
O&M ARTCC	FUTURMC	ARTCC INFLATION POST 1986	3.00%
	FUTURMC	ARTCC INFLATION 1991	4.64%
	FUTURMC	ARTCC INFLATION 1992	4.64%
	FUTURMC	ARTCC INFLATION POST 1992	4.64%
	FUTURMC	ARTCC NASP COMPL RATE 1986-92	14.30%
	OPSFUTUR	1992 TOTAL ARTCC HANDLES	48,851,998
	OPSFUTUR	1997 TOTAL ARTCC HANDLES	45,300,000
O&M TOWER	FUTURMC	TOWER INFLATION POST 1986	3.00%
	FUTURMC	TOWER INFLATION 1991	4.64%
	FUTURMC	TOWER INFLATION 1992	4.64%
	FUTURMC	TOWER INFLATION POST 1992	4.64%
	FUTURMC	TOWER NASP COMPL RATE 1986-92	14.30%
	OPSFUTUR	1992 AC OPS AT TOWERS	358,211
	OPSFUTUR	1992 COM OPS AT TOWERS	1,776,675
	OPSFUTUR	1992 GA OPS AT TOWERS	31,651,843
	OPSFUTUR	1992 MIL OPS AT TOWERS	903,658
	OPSFUTUR	1997 AC OPS AT TOWERS	344,196
	OPSFUTUR	1997 COM OPS AT TOWERS	2,007,081
	OPSFUTUR	1997 GA OPS AT TOWERS	35,548,118
	OPSFUTUR	1997 MIL OPS AT TOWERS	922,283
O&M TRACON	FUTURMC	TRACON INFLATION POST 1986	3.00%
	FUTURMC	TRACON INFLATION 1991	4.64%
	FUTURMC	TRACON INFLATION 1992	4.64%
	FUTURMC	TRACON INFLATION POST 1992	4.64%
	FUTURMC	TRACON NASP COMPL RATE 1986-92	14.30%
	OPSFUTUR	1992 AC TSOS AT TRACONS	12,585,108
	OPSFUTUR	1992 COM TSOS AT TRACONS	6,830,565
	OPSFUTUR	1992 GA TSOS AT TRACONS	33,701,399
	OPSFUTUR	1992 MIL TSOS AT TRACONS	3,953,017
	OPSFUTUR	1997 AC TSOS AT TRACONS	15,977,932
	OPSFUTUR	1997 COM TSOS AT TRACONS	8,306,686
	OPSFUTUR	1997 GA TSOS AT TRACONS	35,585,520
	OPSFUTUR	1997 MIL TSOS AT TRACONS	3,728,000
	OPSFUTUR	1992 AC OPS AT TRACONS	11,712,130
	OPSFUTUR	1992 COM OPS AT TRACONS	5,506,384
	OPSFUTUR	1992 GA OPS AT TRACONS	22,455,854
	OPSFUTUR	1992 MIL OPS AT TRACONS	1,625,542

Table 1.1 (cont.)

VARIABLE OPTIONS

SYSTEM VARIABLES
07-Aug-86

BUDGET ITEM	FILE	VARIABLE	SETTING
	OPSFUTUR	1997 AC OPS AT TRACONS	13,445,113
	OPSFUTUR	1997 COM OPS AT TRACONS	6,528,053
	OPSFUTUR	1997 GA OPS AT TRACONS	25,778,529
	OPSFUTUR	1997 MIL OPS AT TRACONS	1,659,147
O&M FSS	FUTURMC	FSS INFLATION POST 1986	3.00%
	FUTURMC	FSS INFLATION 1991	4.64%
	FUTURMC	FSS INFLATION 1992	4.64%
	FUTURMC	FSS INFLATION POST 1992	4.64%
	FUTURMC	FSS NASP COMPL RATE 1986-92	14.30%
	OPSFUTUR	1992 TOTAL FSS SERVICES	37,599,674
	OPSFUTUR	1997 TOTAL FSS SERVICES	40,500,000
O&M NAVAID MAINT	FUTUROM	UNALLOC MAINT INFL RATE 1987-92	-8.62%
	FUTUROM	UNALLOC MAINT INFL RATE 1993-97	4.64%
O&M AVIATION STDS	FUTUROM	AV STDS O&M INFL RATE 1987-90	3.00%
	FUTUROM	AV STDS O&M INFL RATE 1991	4.64%
	FUTUROM	AV STDS O&M INFL RATE 1992	4.64%
	FUTUROM	AV STDS O&M INFL RATE 1993-97	4.64%
	FUTUROM	AV STDS AV SEC INFL RATE 1987-90	3.00%
	FUTUROM	AV STDS AV SEC INFL RATE 1991	4.64%
	FUTUROM	AV STDS AV SEC INFL RATE 1992	4.64%
	FUTUROM	AV STDS AV SEC INFL RATE 1993-97	4.64%
O&M OVERHEAD	FUTUROM	TOWERS THAT FAIL PHASE II 1985	$6,017,076
	FUTUROM	TOW FAIL PHS II INFL RATE 1986-90	3.97%
	FUTUROM	TOW FAIL PHS II INFL RATE 1991	4.20%
	FUTUROM	TOW FAIL PHS II INFL RATE 1992	4.38%
	FUTUROM	TOW FAIL PHS II INFL RATE 1993-97	4.64%
	FUTUROM	WEATHER OBS 1986$ BASE 1985	$11,215,788
	FUTUROM	WEATHER OBS 1986$ BASE 1986	$11,608,341
	FUTUROM	WEATHER OBS 1986$ BASE 1988	$12,677,786
	FUTUROM	WEATHER OBS 1986$ BASE 1989	$13,351,713
	FUTUROM	WEATHER OBS 1986$ BASE 1990	$13,376,180
	FUTUROM	WEATHER OBS 1986$ BASE 1991	$13,385,786
	FUTUROM	WEATHER OBS 1986$ BASE 1992	$13,472,997
	FUTUROM	WEATHER OBS INFL RATE 1987-1990	3.00%
	FUTUROM	WEATHER OBS INFL RATE 1991	4.64%
	FUTUROM	WEATHER OBS INFL RATE 1992	4.64%
	FUTUROM	WEATHER OBS INFL RATE 1993-1997	4.64%
	FUTUROM	TOWER SUBSIDY 1985-1988	$795,252
	FUTUROM	CONTRACT TOWERS 1985	$1,044,894
	FUTUROM	CONTRACT TOWERS INFL RATE 1986-92	0.14%
	FUTUROM	CONTRACT TOWERS INFL RATE 1993-97	4.64%
	FUTUROM	CIVILIANS AT MILITARY 1985	$2,009,255
	FUTUROM	CIVILIANS AT MILITARY 1986	$2,079,579
	FUTUROM	CIV AT MIL INFLATION RATE 1987-90	3.00%
	FUTUROM	CIV AT MIL INFLATION RATE 1991	4.64%
	FUTUROM	CIV AT MIL INFLATION RATE 1992	4.64%
	FUTUROM	CIV AT MIL INFLATION RATE 1993-97	4.64%
	FUTUROM	MILITARY COMMUNICATIONS 1985	$1,729,775

Table 1.1 (cont.)

VARIABLE OPTIONS

SYSTEM VARIABLES
07-Aug-86

BUDGET ITEM	FILE	VARIABLE	SETTING
	FUTUROM	MIL CON INFLATION RATE 1986-92	13.06%
	FUTUROM	MIL CON INFLATION RATE 1993-97	4.64%
R&D BUDGET	FUTURRD	R&D TOTAL 1985 BUDGET	$265,000,000
	FUTURRD	R&D TOTAL 1986 BUDGET	$190,000,000
	FUTURRD	R&D TOTAL 1987 BUDGET	$134,500,000
	FUTURRD	R&D TOTAL 1988 BUDGET	$214,000,000
	FUTURRD	R&D TOTAL 1989 BUDGET	$222,000,000
	FUTURRD	R&D TOTAL 1990 BUDGET	$229,000,000
	FUTURRD	R&D TOTAL 1991 BUDGET	$237,000,000
	FUTURRD	R&D TOTAL 1992 BUDGET	$210,000,000
	FUTURRD	R&D INFLATION POST 1992	4.64%
F&E BUDGET	FUTURFE	F&E DISCOUNT RATE	10.00%
	FUTURFE	F&E TOTAL 1986 BUDGET	$950,000 (000)
	FUTURFE	F&E TOTAL 1987 BUDGET	$872,500 (000)
	FUTURFE	F&E TOTAL 1988 BUDGET	$1,414,600 (000)
	FUTURFE	F&E TOTAL 1989 BUDGET	$1,414,600 (000)
	FUTURFE	F&E TOTAL 1990 BUDGET	$1,414,600 (000)
	FUTURFE	F&E TOTAL 1991 BUDGET	$1,414,600 (000)
	FUTURFE	F&E TOTAL 1992 BUDGET	$1,414,600 (000)
	FUTURFE	F&E TOTAL 1993 BUDGET	$1,414,600 (000)
	FUTURFE	F&E TOTAL 1994 BUDGET	$1,414,600 (000)
	FUTURFE	F&E TOTAL 1995 BUDGET	$1,414,600 (000)
	FUTURFE	F&E TOTAL 1996 BUDGET	$1,414,600 (000)
	FUTURFE	F&E TOTAL 1997 BUDGET	$1,414,600 (000)
	FUTURFE	F&E TOTAL 1998 BUDGET	$1,414,600 (000)
	FUTURFE	F&E TOTAL 1999 BUDGET	$1,414,600 (000)
	FUTURFE	F&E TOTAL 2000 BUDGET	$1,414,600 (000)
	FUTURFE	F&E INFLATION RATE POST 1988	0.00%
	FUTURFE	F&E INFLATION RATE POST 1992	4.64%
AIP BUDGET	FUTURAIP	AIP TOTAL 1985 BUDGET	$924,737,000
	FUTURAIP	AIP TOTAL 1986 BUDGET	$885,000,000
	FUTURAIP	AIP TOTAL 1987 BUDGET	$712,000,000
	FUTURAIP	AIP TOTAL 1988 BUDGET	$800,000,000
	FUTURAIP	AIP INFLATION POST 1988	0.00%
	FUTURAIP	AIP % PR GRANTS 1985-92	56.77%
	FUTURAIP	AIP % RL GRANTS 1985-92	14.10%
	FUTURAIP	AIP % CS GRANTS 1985-92	8.66%
	FUTURAIP	AIP % GA GRANTS 1985-92	20.47%
	FUTURAIP	AIP INFLATION POST 1992	4.64%
	FUTURAIP	AIP % PR GRANTS 1992-97	56.77%
	FUTURAIP	AIP % RL GRANTS 1992-97	14.10%
	FUTURAIP	AIP % CS GRANTS 1992-97	8.66%
	FUTURAIP	AIP % GA GRANTS 1992-97	20.47%
ELASTICITIES	RAMSEY FILES	AIR CARRIER DOMESTIC ELASTICITY	1
	RAMSEY FILES	AIR CARRIER INTL ELASTICITY	1
	RAMSEY FILES	AIR CARRIER FREIGHT ELASTICITY	1
	RAMSEY FILES	COMMUTER ELASTICITY	1
	RAMSEY FILES	AIR TAXI ELASTICITY	1

Table 1.1 (cont.)

VARIABLE OPTIONS

SYSTEM VARIABLES
07-Aug-86

BUDGET ITEM	FILE	VARIABLE	SETTING
	RAMSEY FILES	GENL AVIATION PISTON ELASTICITY	2
	RAMSEY FILES	GENL AVIATION TURBO ELASTICITY	1
	RAMSEY FILES	ROTOR ELASTICITY	1
	RAMSEY FILES	GOVERNMENT ELASTICITY	1
	RAMSEY FILES	MILITARY ELASTICITY	1
MINIMUM SYSTEM	FUTURMC	MIN SYS % TOWER JC GROW RATE	9.90%
	FUTURMC	MIN SYS % TRACON JC GROW RATE	16.74%
	OPSFUTUR	MIN GA % TOWER OPS GROW RATE	6.01%
	OPSFUTUR	MIN GA % TRACON TSOS GROW RATE	4.15%

Location: FUTURMC
Cell: AD1

Table 1.2

PRINT OPTIONS

PRINT SELECT= 9

PRINT OPTIONS	SETTING
NOTHING	0
ALLOCATION TABLES ONLY	1
KOOFUT + ALLOCATION TABLES	2
ALLOCATION TABLES + MINSYS + TAXRAM	3
KOOFUT + ALLOCATION TABLES + MINSYS + TAXRAM	4
ALLOCATION TABLES + VOL 1 TABLES	5
ALLOCATION TABLES + VOL 3 TABLES	6
ALLOCATION TABLES + VOL 1 + VOL 3 TABLES	7
ALLOCATION TABLES + VOL 1 + VOL 3 TABLES + TAXRAM	8
EVERYTHING	9
VOLUME 1 TABLES ONLY (INCLUDES MINSYS)	10
VOLUME 3 TABLES ONLY (INCLUDES PI TABLE)	11

Allocation Tables = Full cost allocations to ten user groups (e.g., Volume 1, Table 2.8.3.1).

KOOFUT = Overhead allocated to budget categories.

MINSYS = Minimun General Aviation allocation.

TAXRAM = Current taxes and recovery.

Volume 1 Tables = Tables from Volume 1 for year of interest.

Volume 3 Tables = Tables from Volume 3 for year of interest.

when the model runs. For example, in this case, the number nine is entered meaning that the model will print all tables.

1.5 Running the Model

Once all of these options have been selected and the user is prepared to proceed with the model, he/she must save FUTURMC with its new settings and then retrieve the file OPSFUTUR. The model will run automatically, beginning with the year selected and continuing for the number of years selected. If at any time one wishes to stop the model while it is running, press the control key and the break key simultaneously. The computer will beep and a flashing red flag will appear in the upper right-hand corner of the screen. This will disappear when escape is pressed. Under no circumstances should changes ever be made in any of the files in this model other than in the variable listing and print option sections of the FUTURMC file. Questions should be directed to Gellman Research Associates, Inc. (215) 884-7500.

1.6 Quick Reference

Finally, Table 1.3 is a summary of how to run this model.

Table 1.3

COST ALLOCATION MODEL COMMAND SUMMARY

Model is controlled in LOTUS 123 from FUTURMC.

To retrieve FUTURMC:

/FRFUTURMC {Return} {Control-Break} Once in file: **{Esc}**

Find variable options:

{F5} W1 {Return}

Select starting year:

Move to cell Z5, enter starting year {Return}

Select number of years to run:

Move to cell Z6, enter number of years {Return}

To change any other variable:

**Using arrow keys, go to old variable setting,
enter new setting {Return}**

To print out new variable settings sorted by affected files:

{Alt}S [simultaneously]

To print out new variable settings as they appear in FUTURMC:

{Alt}R [simultaneously]

To select model print options (see Table 1.2):

**{F5} AC1 {Return}, move right one column,
enter desired print option {Return}**

Saving FUTURMC (must always be saved):

/FS {Return} R

Starting model:

/FROPSFUTUR {Return}

To interrupt model:

{Control-Break} Once in file: **{Esc}**

Section 2.0

INDIVIDUAL FILES

This section summarizes the functions of the individual files within the model. Though it is useful to understand the functions each file performs, it is strongly urged that users do not change any of these files. Table 1.1 shows all of the model variables as they appear in FUTURMC. These are the only changes that should ever be made in the model. For each file there is a corresponding table of the variables in FUTURMC that control that specific file and which can be changed.

2.1 FUTURMC

This file controls the entire model, as shown in Section 1.0 of this volume. FUTURMC also performs a specific task within the model, and it is this specific task which is dealt with here. This file takes as inputs the marginal costs estimated for ARTCCs, towers, TRACONs and FSSs. There are two sets of marginal costs:

- FY1984 marginal costs were estimated based on actual activity and costs incurred by the FAA in that fiscal year.
- FY1992 marginal costs were estimated based upon projections of activity and air traffic and airway facility labor costs for that fiscal year.

For any fiscal year covered by the model, two assumptions about the relevant marginal costs are made:

- o One pertaining to the effects of inflation.
- o One pertaining to how quickly and over what time period the NASP will be completed.

For the period 1986 through 1990, labor rates are assumed to increase at an annual rate of 3.0 percent. From 1991 through 1997 the annual increase is 4.64 percent. (The effective annual inflation rate from 1986 through 1992 is 3.5 percent). This is consistent with the most recent Economic Report of the President.

Beginning in 1986, the NASP is assumed to be completed at a rate of 14.3 percent per year. At this rate, by the end of 1992, NASP will be completed. The effect of the NASP assumption is that new FY1992 technology is assumed to be in place and productive. Future marginal costs are then averaged in with the historic marginal cost in the model in order to project marginal costs for any given year. By 1992 and for all years thereafter, only future marginal costs are employed. For the period 1986 through 1991, a mixture of marginal costs are employed.

Also included in this file are the joint operating site costs. These correspond to the constant terms from the econometric cost functions calculated for this study. These costs are also assumed to grow at an annual effective inflation rate of 3.5 percent from 1986 through 1992 and 4.64 percent from 1993-1997. The annual rate of inflation for the period 1985 through 1986 is 3.5 percent.

Like the marginal cost, these joint site costs are subject to the NASP completion rate assumption. That is, new and old technologies (as reflected in the cost function) are blended for the period 1986 through 1991. The same 14.3 percent completion rate is assumed.

Also included in this file are assumptions concerning the percentage of joint tower and TRACON site costs attributable to the minimum general aviation allocation. This determination is made based upon the valuation of each tower and TRACON in terms of the FAA's establishment criteria.

Table 2.1 shows all of the variables that can be changed in FUTURMC, grouped according to budget items. As noted in Section 1.0, the first two variables control the running of the model itself. For each of the the ATC facilities, one can select inflation rates for 1987-1990, 1991, 1992, and 1993-1997 and NASP completion rates for 1986-1992. In addition, growth rates for the minimum system's percentage of tower and TRACON joint costs can be adjusted.

2.2 OPSFUTUR

This file derives measures of activity at all operating sites for the years 1985 through 1997. Once the activity measures are derived for the year of interest, they are multiplied by the marginal costs from the FUTURMC file in order to derive estimates on variable costs attributable to each user group. These variable costs, together with joint operating site costs are used in the Ramsey allocation files.

Table 2.1

FUTURMC

BUDGET ITEM	FILE	VARIABLE	SETTING
	FUTURMC	FISCAL YEAR	1992
	FUTURMC	MULTIPLE YEAR OPTION (0 YEARS)	1
O&M ARTCC	FUTURMC	ARTCC INFLATION POST 1986	3.00%
	FUTURMC	ARTCC INFLATION 1991	4.64%
	FUTURMC	ARTCC INFLATION 1992	4.64%
	FUTURMC	ARTCC INFLATION POST 1992	4.64%
	FUTURMC	ARTCC NASP COMPL RATE 1986-92	14.30%
O&M TOWER	FUTURMC	TOWER INFLATION POST 1986	3.00%
	FUTURMC	TOWER INFLATION 1991	4.64%
	FUTURMC	TOWER INFLATION 1992	4.64%
	FUTURMC	TOWER INFLATION POST 1992	4.64%
	FUTURMC	TOWER NASP COMPL RATE 1986-92	14.30%
O&M TRACON	FUTURMC	TRACON INFLATION POST 1986	3.00%
	FUTURMC	TRACON INFLATION 1991	4.64%
	FUTURMC	TRACON INFLATION 1992	4.64%
	FUTURMC	TRACON INFLATION POST 1992	4.64%
	FUTURMC	TRACON NASP COMPL RATE 1986-92	14.30%
O&M FSS	FUTURMC	FSS INFLATION POST 1986	3.00%
	FUTURMC	FSS INFLATION 1991	4.64%
	FUTURMC	FSS INFLATION 1992	4.64%
	FUTURMC	FSS INFLATION POST 1992	4.64%
	FUTURMC	FSS NASP COMPL RATE 1986-92	14.30%
MINIMUM SYSTEM	FUTURMC	MIN SYS % TOWER JC GROW RATE	9.90%
	FUTURMC	MIN SYS % TRACON JC GROW RATE	16.74%

The derivation of the activity measures is straightforward. For the four types of ATC facilities, actual FAA activity forecasts are entered for 1992 and 1997 and the model extrapolates their growth rates evenly over the time periods:

- o 1985-1992,
- o 1993-1997.

The specific variables that can be changed for OPSFUTUR are listed in Table 2.2. For ARTCCs, total handles for 1992 and 1997 are entered directly. Annualized growth rates for 1985-1992 and 1993-1997 are calculated and applied to spread the activity growth evenly over the two time periods. Tower activity is measured in operations (ops). Ops are entered for 1992 and 1997 broken down into four categories:

- o AC (includes Air Carrier--Domestic, Air Carrier--International, and Air Carrier--Freight),
- o Com (Commuters),
- o GA (Air Taxis, General Aviation--Piston, General Aviation--Turbine, and Government),
- o MIL (Military).

Annual growth rates are calculated separately for each group for 1985-1992 and 1992-1997 and are used to spread the growth evenly over the time periods.

TRACON activity is measured by operations, seconds and overs (TSOs) and by operations only (ops). These activity measures are entered in the four categories for 1992 and 1997 and again the annualized growth rates for each individual category is applied evenly over the two time periods.

Table 2.2

OPSFUTUR

BUDGET ITEM	FILE	VARIABLE	SETTING
O&M ARTCC	OPSFUTUR	1992 TOTAL ARTCC HANDLES	40,851,998
	OPSFUTUR	1997 TOTAL ARTCC HANDLES	45,300,000
O&M TOWER	OPSFUTUR	1992 AC OPS AT TOWERS	358,211
	OPSFUTUR	1992 COM OPS AT TOWERS	1,776,675
	OPSFUTUR	1992 GA OPS AT TOWERS	31,651,843
	OPSFUTUR	1992 MIL OPS AT TOWERS	903,658
	OPSFUTUR	1997 AC OPS AT TOWERS	344,196
	OPSFUTUR	1997 COM OPS AT TOWERS	2,007,081
	OPSFUTUR	1997 GA OPS AT TOWERS	35,548,118
	OPSFUTUR	1997 MIL OPS AT TOWERS	922,283
O&M TRACON	OPSFUTUR	1992 AC TSOS AT TRACONS	12,585,108
	OPSFUTUR	1992 COM TSOS AT TRACONS	6,830,565
	OPSFUTUR	1992 GA TSOS AT TRACONS	33,701,399
	OPSFUTUR	1992 MIL TSOS AT TRACONS	3,953,017
	OPSFUTUR	1997 AC TSOS AT TRACONS	15,977,932
	OPSFUTUR	1997 COM TSOS AT TRACONS	8,306,686
	OPSFUTUR	1997 GA TSOS AT TRACONS	35,585,520
	OPSFUTUR	1997 MIL TSOS AT TRACONS	3,728,000
	OPSFUTUR	1992 AC OPS AT TRACONS	11,712,130
	OPSFUTUR	1992 COM OPS AT TRACONS	5,506,384
	OPSFUTUR	1992 GA OPS AT TRACONS	22,455,854
	OPSFUTUR	1992 MIL OPS AT TRACONS	1,625,542
	OPSFUTUR	1997 AC OPS AT TRACONS	13,445,113
	OPSFUTUR	1997 COM OPS AT TRACONS	6,528,053
	OPSFUTUR	1997 GA OPS AT TRACONS	25,778,529
	OPSFUTUR	1997 MIL OPS AT TRACONS	1,659,147
O&M FSS	OPSFUTUR	1992 TOTAL FSS SERVICES	37,599,674
	OPSFUTUR	1997 TOTAL FSS SERVICES	40,500,000
MINIMUM SYSTEM	OPSFUTUR	MIN GA % TOWER OPS GROW RATE	6.01%
	OPSFUTUR	MIN GA % TRACON TSOS GROW RATE	4.15%

FSS total services, like ARTCC handles, are simply entered for 1992 and 1997 with the growth spread evenly over 1985-1992 and 1993-1997. Finally, the percentage of tower operations and TRACON TSOs that are required by the minimum GA system are derived in OPSFUTUR and the rate at which those percentages can grow between 1985 and 1997 can be adjusted as desired.

2.3 FUTURRD

This file allocates current and future R&D budgets to the following project categories.

- o air carriers projects,
- o general aviation projects,
- o projects for IFR users,
- o projects for all users.

In addition, the table identifies those R&D projects which would be allocated to the public sector if regulatory costs are also allocated to the public sector. These R&D projects are primarily environmental programs related to the regulatory functions of the agency.

As shown in Table 2.3, the user can enter specific total R&D budgets for each year between 1985 and 1992. For 1993 to 1997, the 1992 budget is inflated at an adjustable annual percentage (4.64 percent in the base case).

2.4 FUTURFE

This file presents the allocations of FAA F&E budgets for the period 1985 through 1997. The file first contains projected

Table 2.3

FUTURRD

BUDGET ITEM	FILE	VARIABLE	SETTING
R&D BUDGET	FUTURRD	R&D TOTAL 1985 BUDGET	$265,000,000
	FUTURRD	R&D TOTAL 1986 BUDGET	$190,000,000
	FUTURRD	R&D TOTAL 1987 BUDGET	$134,500,000
	FUTURRD	R&D TOTAL 1988 BUDGET	$214,000,000
	FUTURRD	R&D TOTAL 1989 BUDGET	$222,000,000
	FUTURRD	R&D TOTAL 1990 BUDGET	$229,000,000
	FUTURRD	R&D TOTAL 1991 BUDGET	$237,000,000
	FUTURRD	R&D TOTAL 1992 BUDGET	$210,000,000
	FUTURRD	R&D INFLATION POST 1992	4.64%

F&E budgets. These budgets are then discounted back to the year of interest and amortized over a 13 year period.

The file also distributes the F&E budgets into the following project categories:

- o air carriers projects,
- o general aviation projects,
- o projects for IFR users,
- o projects for all users,
- o projects in the public interest.

The result of the procedure is that F&E allocations are constant over the 1985-1997 time period. This evening of the F&E budget over time was necessary to ensure the user taxes would not have to change periodically in order to accommodate fluctuations in the F&E programs.

Table 2.4 shows that the user can alter the discount rate used in the F&E amortization. Projected F&E budgets are entered for all years from 1986 through 2000 (in thousands) for use in the amortization. In addition, F&E budgets can be inflated for the periods:

- o 1989-1992 (0.00 percent in base case),
- o 1993-1997 (4.64 percent in base case).

2.5 FUTURAIP

This file shows the allocation of annual AIP funds to primary, reliever, commercial services and general aviation airports. The distribution is based on an analysis of a sample of airport grants for the years 1980, 1982, 1983 and 1984. The distribution among the airport types is constant over time.

Table 2.4

FUTURFE

BUDGET ITEM	FILE	VARIABLE	SETTING
F&E BUDGET	FUTURFE	F&E DISCOUNT RATE	10.00%
	FUTURFE	F&E TOTAL 1986 BUDGET	$950,000 (000)
	FUTURFE	F&E TOTAL 1987 BUDGET	$872,500 (000)
	FUTURFE	F&E TOTAL 1988 BUDGET	$1,414,600 (000)
	FUTURFE	F&E TOTAL 1989 BUDGET	$1,414,600 (000)
	FUTURFE	F&E TOTAL 1990 BUDGET	$1,414,600 (000)
	FUTURFE	F&E TOTAL 1991 BUDGET	$1,414,600 (000)
	FUTURFE	F&E TOTAL 1992 BUDGET	$1,414,600 (000)
	FUTURFE	F&E TOTAL 1993 BUDGET	$1,414,600 (000)
	FUTURFE	F&E TOTAL 1994 BUDGET	$1,414,600 (000)
	FUTURFE	F&E TOTAL 1995 BUDGET	$1,414,600 (000)
	FUTURFE	F&E TOTAL 1996 BUDGET	$1,414,600 (000)
	FUTURFE	F&E TOTAL 1997 BUDGET	$1,414,600 (000)
	FUTURFE	F&E TOTAL 1998 BUDGET	$1,414,600 (000)
	FUTURFE	F&E TOTAL 1999 BUDGET	$1,414,600 (000)
	FUTURFE	F&E TOTAL 2000 BUDGET	$1,414,600 (000)
	FUTURFE	F&E INFLATION RATE POST 1988	0.00%
	FUTURFE	F&E INFLATION RATE POST 1992	4.64%

As illustrated in Table 2.5, the user can enter AIP total budgets for 1985 through 1988 and the growth rate of that 1988 budget from 1989-1992. The derived 1992 budget is then inflated by a selected rate (4.64 percent in the base case) for 1993-1997. In addition, the user can alter the distribution of the total AIP budget between the four airport types for the periods 1985-1992 and 1993-1997.

2.6 FUTUROM

This file disaggregates the current and future O&M budgets among FAA operations budget categories.

The total O&M budget is split among the following categories:

- o ATC site costs.
- o Public interest costs such as towers that fail Phase II and weather observations in the public interest.
- o Overhead items such as administrative support and central training.

The first two categories were analyzed in detail as part of the cost allocation project. That is, for each year there are estimated ATC site costs and public interest costs. The total from these two categories is then subtracted from the actual or projected FAA O&M budget. The residual is split among the overhead categories based upon actual overhead budgets in the year 1986.

This file also projects O&M budgets for the years 1993 through 1997. In the base case, these budgets are projected to

Table 2.5

FUTURAIP

BUDGET ITEM	FILE	VARIABLE	SETTING
AIP BUDGET	FUTURAIP	AIP TOTAL 1985 BUDGET	$924,737,000
	FUTURAIP	AIP TOTAL 1986 BUDGET	$885,000,000
	FUTURAIP	AIP TOTAL 1987 BUDGET	$712,000,000
	FUTURAIP	AIP TOTAL 1988 BUDGET	$800,000,000
	FUTURAIP	AIP INFLATION POST 1988	0.00%
	FUTURAIP	AIP % PR GRANTS 1985-92	56.77%
	FUTURAIP	AIP % RL GRANTS 1985-92	14.10%
	FUTURAIP	AIP % CS GRANTS 1985-92	8.66%
	FUTURAIP	AIP % GA GRANTS 1985-92	20.47%
	FUTURAIP	AIP INFLATION POST 1992	4.64%
	FUTURAIP	AIP % PR GRANTS 1992-97	56.77%
	FUTURAIP	AIP % RL GRANTS 1992-97	14.10%
	FUTURAIP	AIP % CS GRANTS 1992-97	8.66%
	FUTURAIP	AIP % GA GRANTS 1992-97	20.47%

increase from the 1992 budget at an annual rate of 4.64 percent per year.

Also included in this file are the assumptions concerning changes in specific O&M budget categories including: DC airports, aviation standards O&M, aviation standards security, towers that fail Phase II criteria, contract towers, subsidized towers, military installations, military communications and weather observations in the public interest. The assumptions are split into two time periods: 1985 through 1992, and 1993 through 1997.

The variables that the user can input into FUTUROM are listed by budget category in Table 2.6. Total O&M budgets for each year from 1985 through 1992 can be entered as well as the annual rate at which the 1992 O&M budget will grow for the period 1993-1997.

The user can also alter various growth rates for NAVAID maintenance and aviation standards. The 1986 NAVAID maintenance budget is inflated (or deflated as in the base case) by a fixed percentage for the years 1987 through 1992. The derived 1992 budget is then inflated by another percentage for 1993-1997. The two distinct portions of the aviation standards budget, aviation standards O&M and aviation standards safety, each provide for separate inflation rates for four time periods:

- o 1986-1990,
- o 1991,
- o 1992,
- o 1993-1997.

Table 2.6

FUTUROM

BUDGET ITEM	FILE	VARIABLE	SETTING
O&M TOTAL BUDGET	FUTUROM	O&M TOTAL 1985 BUDGET	$2,699,000,000
	FUTUROM	O&M TOTAL 1986 BUDGET	$2,759,000,000
	FUTUROM	O&M TOTAL 1987 BUDGET	$2,814,600,000
	FUTUROM	O&M TOTAL 1988 BUDGET	$3,041,200,000
	FUTUROM	O&M TOTAL 1989 BUDGET	$3,019,200,000
	FUTUROM	O&M TOTAL 1990 BUDGET	$3,036,300,000
	FUTUROM	O&M TOTAL 1991 BUDGET	$3,060,200,000
	FUTUROM	O&M TOTAL 1992 BUDGET	$3,085,200,000
	FUTUROM	O&M INFLATION RATE 1993-97	4.64%
O&M NAVAID MAINT	FUTUROM	UNALLOC MAINT INFL RATE 1987-92	-8.62%
	FUTUROM	UNALLOC MAINT INFL RATE 1993-97	4.64%
O&M AVIATION STDS	FUTUROM	AV STDS O&M INFL RATE 1987-90	3.00%
	FUTUROM	AV STDS O&M INFL RATE 1991	4.64%
	FUTUROM	AV STDS O&M INFL RATE 1992	4.64%
	FUTUROM	AV STDS O&M INFL RATE 1993-97	4.64%
	FUTUROM	AV STDS AV SEC INFL RATE 1987-90	3.00%
	FUTUROM	AV STDS AV SEC INFL RATE 1991	4.64%
	FUTUROM	AV STDS AV SEC INFL RATE 1992	4.64%
	FUTUROM	AV STDS AV SEC INFL RATE 1993-97	4.64%
O&M OVERHEAD	FUTUROM	TOWERS THAT FAIL PHASE II 1985	$6,017,076
	FUTUROM	TOW FAIL PHS II INFL RATE 1986-90	3.97%
	FUTUROM	TOW FAIL PHS II INFL RATE 1991	4.20%
	FUTUROM	TOW FAIL PHS II INFL RATE 1992	4.38%
	FUTUROM	TOW FAIL PHS II INFL RATE 1993-97	4.64%
	FUTUROM	WEATHER OBS 1986$ BASE 1985	$11,215,788
	FUTUROM	WEATHER OBS 1986$ BASE 1986	$11,608,341
	FUTUROM	WEATHER OBS 1986$ BASE 1988	$12,677,706
	FUTUROM	WEATHER OBS 1986$ BASE 1989	$13,351,713
	FUTUROM	WEATHER OBS 1986$ BASE 1990	$13,376,188
	FUTUROM	WEATHER OBS 1986$ BASE 1991	$13,385,706
	FUTUROM	WEATHER OBS 1986$ BASE 1992	$13,472,997
	FUTUROM	WEATHER OBS INFL RATE 1987-1990	3.00%
	FUTUROM	WEATHER OBS INFL RATE 1991	4.64%
	FUTUROM	WEATHER OBS INFL RATE 1992	4.64%
	FUTUROM	WEATHER OBS INFL RATE 1993-1997	4.64%
	FUTUROM	TOWER SUBSIDY 1985-1988	$795,252
	FUTUROM	CONTRACT TOWERS 1985	$1,044,094
	FUTUROM	CONTRACT TOWERS INFL RATE 1986-92	0.14%
	FUTUROM	CONTRACT TOWERS INFL RATE 1993-97	4.64%
	FUTUROM	CIVILIANS AT MILITARY 1985	$2,009,255
	FUTUROM	CIVILIANS AT MILITARY 1986	$2,079,579
	FUTUROM	CIV AT MIL INFLATION RATE 1987-90	3.00%
	FUTUROM	CIV AT MIL INFLATION RATE 1991	4.64%
	FUTUROM	CIV AT MIL INFLATION RATE 1992	4.64%
	FUTUROM	CIV AT MIL INFLATION RATE 1993-97	4.64%
	FUTUROM	MILITARY COMMUNICATIONS 1985	$1,729,775
	FUTUROM	MIL CON INFLATION RATE 1986-92	13.06%
	FUTUROM	MIL CON INFLATION RATE 1993-97	4.64%

The rest of the variables in Table 2.6 concern the overhead portion of the O&M budget. The overhead categories that can be adjusted are:

- o towers that fail Phase II,
- o weather observation,
- o subsidized towers,
- o contract towers,
- o civilians at military,
- o military communications.

The budget for towers that fail Phase II is entered for 1985 and can be inflated at distinct rates for these periods:

- o 1986-1990,
- o 1991,
- o 1992,
- o 1993-1997.

For weather observation, base budgets in 1986 dollars can be entered for 1985 through 1992. These bases can be inflated at different rates for four distinct periods:

- o 1987-1990,
- o 1991,
- o 1992,
- o 1993-1997.

Tower subsidies are simply a fixed annual amount $795,252 in the base case) between 1985 and 1988 and $0 afterwards. The contract towers budget is entered for 1985 and inflated by a percentage (0.14 percent in the base case) for 1986-1992 and another percentage (4.64 percent) for 1993-1997.

The budget for civilians at military is entered for 1985 and 1986 and then inflated separately over four time periods:

- o 1987-1990,
- o 1991,
- o 1992,
- o 1993-1997.

Finally, military communications is entered for 1985 and inflated separately for:

- o 1986-1992,
- o 1993-1997.

2.7 KOOFUT71 & KOOFUT72

These two files allocate overhead to direct cost centers based upon allocation statistics. For example, headquarters administration costs are allocated among operating sites based upon the number of total full-time equivalent employees at each of the four types of operating sites in the FAA system. These two files perform these allocations under the assumption that regulatory costs are properly allocated to users.

The first file noted above performs these allocations for the time period 1985 through 1992 while the second performs the allocations for the time period 1993-1997.

These files receive all of their inputs from previous files in the model and contain no variables to be changed by the user.

2.8 KOOFUT81 & KOOFUT82

These files perform the same functions as the files described immediately above. The only difference is that the

allocations are performed under the assumption that regulatory costs are allocated to the public.

KOOFUT81 performs these allocations for the time period 1985 through 1992. KOOFUT82 performs the allocations for the time period 1993-1997.

These files also contain no variables to be changed by the user.

2.9 AVSFUT

This file allocates the AVS O&M budget based upon inspector hours for the year 1984. The budget is broken down into the following categories:

- o general aviation users,
- o general aviation-turbo users,
- o commuter and air taxi users,
- o IFR users,
- o air carriers,
- o military,
- o all users.

The file is divided into two subsegments. The top part of the file shows the period 1985 through 1992 while the bottom provides the allocations for 1993 through 1997. All inputs are received from the model.

2.10 Ramsey Files

These groups of files allocate various costs to the ten user groups including the allocation of joint costs by Ramsey Pricing.

The only inputs these files received that can be changed by the user are the price elasticities for each of the ten user groups.

Each of these files also presents results for the two scenarios used in the model:

- o if regulatory costs are allocated to users (Option 7),
- o if regulatory costs are allocated to the public sector (Option 8).

2.10.1 ARTRFUT1 & ARTRFUT2

These files allocate ARTCC costs and F&E, R&D and aviation standards IFR projects to users, for the periods 1985-1992 (ARTRFUT1) and 1993-1997 (ARTRFUT2). The following costs are estimated for each of the 10 user groups:

- o ARTCC variable costs,
- o ARTCC joint site costs,
- o ARTCC site total costs,
- o ARTCC overhead,
- o IFR R&D projects,
- o IFR F&E projects,
- o aviation standards IFR activities.

2.10.2 TOWRFUT1 & TOWRFUT2

These files allocate tower costs among the ten user groups of interest in the study. The following costs are allocated in this file:

- o variable operating site costs,
- o joint operating site costs,
- o tower overhead costs.

Also included in this file are the minimum GA allocation of tower costs.

TOWRFUT1 allocates tower costs for the period 1985 through 1992; TOWRFUT2 performs the same types of allocations for the period 1993 through 1997.

2.10.3 TRARFUT1 & TRARFUT2

These files allocate TRACON costs among the ten relevant user groups. The former file performs these allocated for the time period 1985 through 1992, while the latter performs the same functions for the time period 1993 through 1997.

The following TRACON costs are allocated in this file:

- operating site variable costs,
- joint operating site costs,
- TRACON overhead costs.

Also included in these files are the minimum general aviation allocations for TRACONS. These minimum general aviation allocations are based upon the determination of whether TRACONs would continue to operate as TRACONs if only general aviation traffic were present. As a result, the minimum cost allocation variable and overhead costs are far less than the full cost allocation.

2.10.4 FSSRFUT1 & FSSRFUT2

These files present the allocation of FSS costs to the ten user groups of interest in this study. The former file performs these allocations for the time period 1985 through 1992 while the latter performs these same functions for the time period 1993 through 1997.

The following costs are allocated in this file:

- FSS operating site variable costs,

- o FSS operating site joint costs,
- o FSS overhead costs.

2.10.5 OPSRFUT1 & OPSRFUT2

This file allocates the following cost centers among user groups using the Ramsey Pricing algorithm:

- o maintenance,
- o aviation standards regulatory activities,
- o regulation of airports,
- o F&E and R&D projects attributable to all users,
- o F&E and R&D projects attributable to general aviation users,
- o overhead items allocated to direct cost centers.

The OPSRFUT1 file evaluates the years 1985 through 1992. The latter file evaluates the time period 1993 through 1997.

2.10.6 OPSRFU1A & OPSRFU2A

These files allocate airport grants and airport grant overhead to the ten user group categories. Grants allocated among users are:

- o primary grants,
- o commercial service grants,
- o reliever grants,
- o general aviation airport grants,
- o overhead on these categories.

OPSRFU1A performs these allocations for the period 1985 through 1992. OPSRFU2A performs these allocations for the years 1993 through 1997.

2.10.7 OPSVFUT1 & OPSVFUT2

These files allocate certain air carrier projects and activities among air carrier groups. The cost categories included in this file are:

- o aircraft purchase loan guarantee program,
- o overhead on the aircraft purchased loan guarantee program,
- o F&E air carrier projects,
- o R&D air carrier projects.

OPSVFUT1 performs these allocations for the years 1985 through 1992; OPSVFUT2 performs the allocations for the time period 1993 through 1997.

2.11 Allocation Tables

These files summarize the full budget allocations to all ten user groups. In addition to presenting figures that include applicable overhead, these files have tables splitting out direct and indirect costs as well as other tables from Volumes I and III. They draw entirely upon inputs from other files in the cost allocation model.

2.11.1 O7RFUT1 & O7RFUT2

O7RFUT1 covers the years 1985 through 1992; O7RFUT2 covers the years 1993 through 1997. Both files represent the scenario in which regulatory costs are allocated to users.

2.11.2 O8RFUT1 & O8RFUT2

These files summarize the final allocations to all ten user groups under the assumption that regulatory costs are borne by

the public sector. O8RFUT1 covers the years 1985 through 1992; O8RFUT2 covers the years 1993 through 1997.

2.12 MINSYS

This file develops the minimum general aviation allocation system for the time period 1985 through 1997. It draws entirely on inputs from several other files in the cost allocation model.

2.13 TAXRAM1 & TAXRAM2

These files calculate the direct user taxes discussed in detail in Volume 4 of the report. TAXRAM1 performs calculations for the years 1985 through 1992, while TAXRAM2 performs the calculations for the time period 1993 through 1997.

These taxes are designed to cover fully allocated costs for each user group. The allocated costs are drawn from the O7RFUT and O8RFUT files. The files also project various activity measures and fleet sizes for different user groups. They also draw inputs entirely from other files in the model.

2.14 ALLOCSUM

This file simply accumulates data results from each year that the model is run. This data is then used to generate the various pie, bar and line graphs in the report. These graphs are printed using PGRAPH.

Section 3.0

DATABASES

3.1 Introduction

This section presents the databases which were used to construct the cost allocation model. The FAA budget has been segregated into four general categories:

- O&M,
- F&E,
- R&D,
- airport grants.

This same categorization is used to describe the databases.

3.2 O&M

The majority of O&M costs are related to the production of air traffic control services at FAA operating sites--ARTCCs, FSSs, TRACONS and towers. The direct costs of producing these services are documented in the econometric analysis in Volume 5, and include:

- ATC labor costs,
- AFS labor costs associated with operating sites,
- leased telecommunications.

Shown in Figure 3.1 are the projected changes in activity at FAA operating sites over the period 1985 through 1997. These growth rates govern the forecast changes in activity in the

Figure 3.1

INDICES OF GROWTH IN ACTIVITY AT
FAA OPERATING SITES
(1985 = 100)

	ARTCC Handles*		FSS Services**		TRACON TSOs***		Tower Operations***	
	1992	1997	1992	1997	1992	1997	1992	1997
Air Carriers	125.4	137.8	105.1	114.8	107.6	136.6	132.3	127.1
Commuters	162.6	214.8	112.2	125.7	125.7	152.9	144.8	163.6
General Aviation Plus Government	125.8	139.7	118.4	128.3	132.5	139.9	134.8	151.4
Military	103.8	99.5	90.9	88.7	91.9	86.7	107.3	109.5
Combined	125.4	139.1	114.5	123.3	121.8	135.7	134.3	150.3

*Based on FAA: "Air Route Traffic Control Center Forecasts--Fiscal Years 1985-1996" (April, 1985).

**Based on FAA: "Total Flight Services, Pilot Briefs, Aircraft Contacted and Flight Plans Originated--Flight Service Stations Fiscal Years 1985-1992" (October, 1985).

***Based on FAA Terminal Area Forecasts (1984) (Note: FAA Aviation Forecasts does not provide breakdown of relative growth rates at TRACONs and towers).

model. The model also allows the user to change cost inflation factors as described in Sections 1.0 and 2.0 above.

The remaining cost categories in the O&M budget were derived directly from FAA budgets; shown below are the 1985 levels and how they were forecast:

		($-MIL) 1985	Labor Inflation
o	aviation standards	257.9	Y
o	airports administration	26.6	3
o	maintenance of ATC system[1]	388.3	Y[2]
o	centralized training	102.1	3
o	installation and material service	193.4	3[3]
o	administrative support (including NOAA)	180.4	3

3.3 F&E

The database for facilities and equipment expenditures in the period 1984 through 1992 was developed from budgetary information. Specifically, the budgets for 1984, 1985 and 1986, together with congressional smart sheets, were utilized to identify the ultimate allocation of individual F&E projects. Each project was allocated to one of five categories:

---

[1]Other than those costs directly accounted for at ATC sites as documented in Volume 5.

[2]Maintenance costs are also affected by changes in labor effort due to changes in technology as identified in the 1990 FMF.

[3]These overhead item re part of the residual O&M budget calculated as: Total O&M-ATC costs-other items. In the post-1992 environment, these costs increase at a rate of 4.64 percent.

- o air carrier,
- o general aviation,
- o IFR users (denoted as "not VFR" in the tables which follow),
- o all users,
- o public interest.

In all cases the avoidable cost concept was utilized to allocate each project to the proper category.

The following tables show these allocations for the period 1984 through 1992.

F&E DATABASE

F&E(1984/1985/1986 BUDGET) 13-Nov-85
464FE84 TOTAL DOLLARS(000) 1984

ACTIVITY	PAGE	PROGRAM	AIR CARR.	GA	NOT VFR	ESTAB ALL CRITERIA		PI
ARTCC	191	LONG RANGE RADAR	0	0	81	0	0	0
ARTCC	192	RADAR MICROWAVE LINK	0	0	38800	0	0	0
ARTCC	193	NEXT GEN. WEATHER RADAR	2900	0	0	0	0	0
ARTCC	194	ATC RADAR BEACON SYSTEM	0	0	0	0	0	0
ARTCC	195	IMPROVE ATC EN ROUTE RADAR	0	0	700	0	0	0
ARTCC	196	HOST COMPUTER	2000	0	0	0	0	0
ARTCC	197	ADVANCED AUTOMATION SYSTEM	0	0	0	0	0	0
ARTCC	198	COM. FACILITY CONSOLID.	0	0	0	0	0	0
ARTCC	199	ARTCC BUILDINGS/PLANT	0	0	6646	0	0	0
ARTCC	200	DATA MULTIPLEXING NETWORK	0	0	0	0	0	0
ARTCC	201	UPGRADE TRAFFIC MANAG.	0	0	0	0	0	0
ARTCC	202	IMPROVE EN ROUTE COM.	0	0	3243	0	0	0
ARTCC	244(84)	PROVIDE R&L TRUNKING	0	0	1200	0	0	0
ARTCC	246(84)	PROVIDE CENTER WEATHER PROC.	0	0	0	25000	0	0
ARTCC	246(84)	CNFLCT ALRT/MIN SAFE ALT WRNG	0	0	2776	0	0	0
ARTCC	248(84)	EN RTE AUTOMATION HRDWRE IMPRV	0	0	1700	0	0	0
ARTCC	249(84)	REPLACE ARTCC/RCAG TONE EQPT	0	0	0	0	0	0
ARTCC	250(84)	INTEGRATE NOARDS APPROH CNTRLS	0	0	1600	0	0	0
ARTCC	252(84)	PROVIDE RADIN ENHANCEMENTS	5200	0	0	0	0	0
ARTCC	251(84)	PROVIDE ARTCC CONSOLIDATION	0	0	2400	0	0	0
ARTCC	253(84)	IN-SERVICE COMM IMPROVEMENTS	0	0	600	0	0	0
ARTCC		TOTAL	15,200	0	59,954	26,000	0	0
TOWERS	224	REPLACE AIRPORT SURVEIL. RADAR	0	0	99984	0	0	0
TOWERS	225	AIRPORT SURFACE DETECTION	0	0	0	0	0	0
TOWERS	226	AIRPORT SURVEIL. RADAR	0	0	12264	0	0	0
TOWERS	227	TERMINAL RADAR SYSTEM	0	0	1178	0	0	0
TOWERS	228	SOUTHERN NEW YORK TRACON	0	0	0	0	0	0
TOWERS	229	ARS REMOTE MONITORING	0	0	0	1804	0	0
TOWERS	210	ESTAB. CONTROL TOWER	0	0	0	0	0	0
TOWERS	211	REPLACE TERMINAL FACILITIES	45367	0	0	0	0	0
TOWERS	212	MODERN, RADAR APPROACH FACIL.	0	0	0	0	0	0
TOWERS	213	INTEG. COM. SWITCH SYSTEM	0	0	0	9302	0	0
TOWERS	214	REPLACE BRITE EQUIP.	17463	0	0	0	0	0
TOWERS	215	IMPROVE TERMINAL COM.	0	0	0	2422	0	0
TOWERS	255(84)	MODE-S SURVEILLANCE & DTA LINK	0	0	114200	0	0	0
TOWERS	258(84)	PROVIDE RADAR IMPROVEMENTS	0	0	1582	0	0	0
TOWERS	259(84)	REPLCE TPX-42 TRNNG EMPTR SYST	0	0	0	0	0	0
TOWERS	239(84)	DCS FOR ARTS IIIA FACILITIES	0	0	22500	0	0	0
TOWERS	260(84)	ESTABLISH/REPLACE FDIO EQPT	0	0	4986	0	0	0
TOWERS	262(84)	PROVIDE ARTS IIIA MEMORY	0	0	4145	0	0	0
TOWERS	264(84)	MODERN/IMPROV TRNNG FACILITIES	0	0	0	16000	0	0
TOWERS	265(84)	REPLC 8 & 9 CHNL VOICE RECORDERS	0	0	0	12037	0	0
TOWERS	266(84)	PROVIDE TRNNG IN-SERVICE ENGR	0	0	0	500	0	0
TOWERS	148(85)	REPLC MULTICHNL VOICE RECORDERS	0	0	0	0	0	0
TOWERS	149(85)	REPLACE ATIS RECORDERS	0	0	0	0	0	0
TOWERS	150(85)	LEAD SECTOR MAINTENANCE PRGRM	0	0	0	0	0	0
TOWERS	151(85)	DIGITAL TIME CODE READERS	0	0	0	0	0	0
TOWERS	152(85)	PROVIDE DABI EQUIPMENT	0	0	0	0	0	0
TOWERS		TOTAL	62830	0	253657	42842	0	

F&E DATABASE (cont.)

FSS	267(84)	FSS	0	10205	0	0	0	0
AIRNAV	217	VOR, DME, VORTAC REPLACEMENT	0	0	0	14093	0	0
AIRNAV	218	LORAN-C	0	0	0	0	0	0
AIRNAV	219	NR-DIRECTIONAL RADIO BEACON	0	0	0	9809	0	0
AIRNAV	220	ILS AND MALSR	0	0	25208	0	0	0
AIRNAV	221	APPROACH LIGHTING SYSTEM	13236	0	0	0	0	0
AIRNAV	222	AWOS	0	0	0	0	0	0
AIRNAV	223	WINDSHEAR	0	0	0	0	0	0
AIRNAV	224	RUNWAY END LIGHTS	0	0	0	0	0	0
AIRNAV	225	PRECISION APPROACH PATH	0	0	0	0	0	0
AIRNAV	226	STRAIGHT-IN, NON-PREC. APPRCH.	0	0	0	4864	0	0
AIRNAV	227	THRESHOLD LIGHTS	0	0	0	3396	0	0
AIRNAV	228	RUNWAY VISUAL RANGE	6589	0	0	0	0	0
AIRNAV	229	AIRPORT APPRCH/LANDING AID FAC.	0	0	0	0	0	0
AIRNAV	279(84)	EST VISUAL APPRCH SLOPE INDIC	0	0	0	3709	0	0
AIRNAV	280(84)	IMPROVE ILS FACILITIES	0	0	1839	0	0	0
AIRNAV	281(84)	IMPROVE VISUAL AID FACILITIES	0	0	0	666	0	0
AIRNAV	282(84)	PROVDE ADD'L FACILITIES TO ILS	0	0	1814	0	0	0
AIRNAV	283(84)	PRECISION LANDING AID IMPRVMNTS	0	0	720	0	0	0
AIRNAV	NA(84)	ESTABLISH ILS	0	0	0	2529	0	0
AIRNAV	NA(85)	MALSR W/ RWAY ALGNMNT IND LGHTS	0	0	0	0	0	0
AIRNAV	NA(85)	NAVAIDS ADDED BY CONGRESS	0	0	0	0	0	0
AIRNAV	NA(85)	ILS POLICY CHANGE	0	0	0	0	0	0
AIRNAV		TOTAL	19,825	0	28,961	39,066	0	0
M,O,M,	231	NATL RADIO COM. SYSTEM	0	0	0	0	0	12824
M,O,M,	232	UNMANNED FAA FAC. AND EQUIP.	0	0	0	11623	0	0
M,O,M,	233	AIRPORT CABLE LOOP	0	0	0	0	0	0
M,O,M,	234	IMPROVE/REPLACE POWER SYSTEM	0	0	0	0	0	0
M,O,M,	235	CAD/E DESIGN SYSTEM	0	0	0	0	0	0
M,O,M,	236	ACQUIRE LAND/EASEMENTS	0	0	0	14328	0	0
M,O,M,	237	MAINTENANCE CONTROL CENTERS	0	0	0	0	0	0
M,O,M,	238	PROVIDE TEST EQUIP.	0	0	0	0	0	0
M,O,M,	239	LOGISTICS/INVENTORY SYSTEM	0	0	0	2327	0	0
M,O,M,	240	AIRPORT DATUM MONV.	0	0	0	0	0	0
M,O,M,	241	SYSTEM INTEG. SUPPORT	0	0	0	0	0	0
M,O,M,	242	NAV AID/ATC FAC.	0	0	0	2002	0	0
M,O,M,	243	AIR NAV/ATC SYSTEM SUPPORT	0	0	0	5002	0	0
M,O,M,	244	FREQ/SPECTRUM ENGIN.	0	0	0	402	0	0
M,O,M,	266(84)	PCB TESTERS FOR MAINTNCE HUBS	0	0	0	4389	0	0
M,O,M,	267(84)	MECHANIZD MATERIAL HANDLG SYST	0	0	0	2902	0	0
M,O,M,	287(84)	COMPUTER-BASED INSTRCTN SYSTMS	0	0	0	1733	0	0
M,O,M,	288(84)	EXPLOSIVE DETECTION SYSTEMS	802	0	0	0	0	0
M,O,M,	NA(85)	AIR SCIENCE CURR GRANT	0	0	0	0	0	0
M,O,M,		TOTAL	802	0	0	44,839	0	12,824

F&E DATABASE (cont.)

AIRCRAFT	246	AIRBORNE LORAN-C	0	0	0	0	0	0
AIRCRAFT	247	SPECTRUM ANALYZER	0	0	0	0	0	0
AIRCRAFT	248	TURBO PROP AIRCRAFT	0	0	0	0	0	0
AIRCRAFT	249	HEAD-UP IN SIMULATOR	0	0	0	0	0	0
AIRCRAFT	250	TURBO PROP AIRCRAFT	0	0	0	23100	0	0
AIRCRAFT	292(84)	PROCURE AIRBORNE MLS	0	0	1300	0	0	0
AIRCRAFT	176(85)	PROCURE LASER RANGE FINDERS	0	0	0	0	0	0
AIRCRAFT		TOTAL	0	0	1300	23100	0	0
D,T,E,	252	FAA TECH. CENTER LEASE	0	0	0	5250	0	0
D,T,E,	253	FIRE TEST FAC.	0	0	0	0	0	0
D,T,E,	254	INFLIGHT FIRE TEST FAC.	0	0	0	0	0	0
D,T,E,	255	AIRPORT IMPROVEMENTS	0	0	0	0	0	0
D,T,E,	256	TECH. CENTER HELIPORT	0	0	0	0	0	0
D,T,E.	257	NAS FIELD SUPPORT	0	0	480	0	0	0
D,T,E,	258	SWITCHING EQUIPMENT	0	0	0	1249	0	0
D,T,E,	259	ENGIN. SERVICES EQUIP.	0	0	0	0	0	0
D,T,E,	296(84)	CONSTRCT TECH SUPPORT FACILITY	0	0	0	11000	0	0
D,T,E,	297(84)	PROVIDE EPA STD COMPLIANCE CAP	0	0	0	1056	0	0
D,T,E,	298(84)	ENHANCE COMPUTER LAB FACILITIES	2182	0	0	0	0	0
D,T,E,	299(84)	ATCSF UPGRADE	1096	0	0	0	0	0
D,T,E,	299(84)	ENHANCE NAS DOCUMENTN FACILITY	0	0	0	605	0	0
D,T,E,	300(84)	ENHANCE GEN PURPOSE COMP FACIL	0	0	0	610	0	0
D,T,E,	160(85)	ENHANCE AVIATION SECURITY LAB	0	0	0	0	0	0
D,T,E,	162(85)	POWER CONDITIONING SYSTEM	0	0	0	0	0	0
D,T,E,	XX(85)	NAS SIMUL SUPPORT FACILITY	0	0	0	0	0	0
D,T,E.		TOTAL	3.278	0	480	20.052	0	0
GRAND TOTAL			101733	102853	349360	194897	0	13224
% OF TOTAL (1984)			13.38%	13.43%	45.96%	25.64%	0.00%	1.58%
% OF TOTAL (1984-1993)			43.07%	4.06%	29.58%	22.23%	0.00%	1.13%
% ALLOCATED TO 1984 TOTAL			387382	32953	224819	168362	0	8569

T = TERMINAL
R = REPLACEMENT/REPAIR
I = IMPROVE SERVICE
O = OUT COSTS
E = EXPANSION
G = GA

H = HELICOPTER
L = LOCAL (WHERE)
O = OVERHEAD
P = PUBLIC INTEREST
J = JET

(1) FUNDING ENDS AFTER 1988
(2) AVERAGE OF 4000 PER YEAR
(3) AVERAGE OF 13400 PER YEAR
(4) FUNDING ENDS AT END OF 1990
(5) 5000 PER YEAR
(6) 5000 PER YEAR
(8) 24000 PER YEAR
(9) 8300 PER YEAR
(10) NON-RADAR TOWERS)3500 ITIN OPS
(11) 6500 PER YEAR
(12) 400 PER YEAR

F&E DATABASE (cont.)

F&E(1984/1985/1986 BUDGET) 13-Nov-85
464FE85 TOTAL DOLLARS(000) 1985

ACTIVITY	PAGE	PROGRAM	AIR CARR.	GA	NOT VFR	ESTAB ALL CRITERIA		PI
ARTCC	191	LONG RANGE RADAR	0	0	31173	0	0	0
ARTCC	192	RADAR MICROWAVE LINK	0	0	40981	0	0	0
ARTCC	193	NEXT GEN. WEATHER RADAR	7500	0	0	0	0	0
ARTCC	194	ATC RADAR BEACON SYSTEM	0	0	0	0	0	0
ARTCC	195	IMPROVE ATC EN ROUTE RADAR	0	0	0	0	0	0
ARTCC	196	HOST COMPUTER	244432	0	0	0	0	0
ARTCC	197	ADVANCED AUTOMATION SYSTEM	17684	0	0	0	0	0
ARTCC	198	COM. FACILITY CONSOLID.	0	0	0	5000	0	0
ARTCC	199	ARTCC BUILDINGS/PLANT	0	0	7311	0	0	0
ARTCC	200	DATA MULTIPLEXING NETWORK	0	0	0	0	0	0
ARTCC	201	UPGRADE TRAFFIC MANAG.	0	0	0	0	0	0
ARTCC	202	IMPROVE EN ROUTE COM.	0	0	7135	0	0	0
ARTCC	244(84)	PROVIDE RML TRUNKING	0	0	0	0	0	0
ARTCC	246(84)	PROVIDE CENTER WEATHER PROC.	0	0	0	0	0	0
ARTCC	248(84)	CNFLCT ALRT/MIN SAFE ALT WRNG	0	0	0	0	0	0
ARTCC	248(84)	EN RTE AUTOMATION HRDWRE IMPRV	0	0	0	0	0	0
ARTCC	249(84)	REPLACE ARTCC/RCAG TONE EQPT	0	0	57689	0	0	0
ARTCC	250(84)	INTEGRATE NONRDR APPRCH CNTRLS	0	0	0	0	0	0
ARTCC	252(84)	PROVIDE NADIN ENHANCEMENTS	0	0	0	0	0	0
ARTCC	253(84)	PROVIDE ARTCC CONSOLIDATION	0	0	0	0	0	0
ARTCC	253(84)	IN-SERVICE COMM IMPROVEMENTS	0	0	0	0	0	0
ARTCC		TOTAL	269.536	0	144.289	5.000	0	0
TOWERS	204	REPLACE AIRPORT SURVEIL. RADAR	0	0	144800	0	0	0
TOWERS	205	AIRPORT SURFACE DETECTION	55920	0	0	0	0	0
TOWERS	206	AIRPORT SURVEIL. RADAR	0	0	3958	0	0	0
TOWERS	207	TERMINAL RADAR SYSTEM	0	0	2338	0	0	0
TOWERS	208	SUSTAIN NEW YORK TRACON	0	0	0	0	0	0
TOWERS	209	VAS REMOTE MONITORING	0	0	0	43422	0	0
TOWERS	210	ESTAB. CONTROL TOWER	0	0	0	0	0	645
TOWERS	211	REPLACE TERMINAL FACILITIES	16916	0	0	0	0	0
TOWERS	212	MODERN, RADAR APPROACH FACIL.	12341	0	0	0	0	0
TOWERS	213	INTEG. COM. SWITCH SYSTEM	0	0	0	10300	0	0
TOWERS	214	REPLACE BRITE EQUIP.	14052	0	0	0	0	0
TOWERS	215	IMPROVE TERMINAL COM.	0	0	0	0	0	0
TOWERS	255(84)	MODE-S SURVEILLANCE & DTA LINK	0	0	11312	0	0	0
TOWERS	256(84)	PROVIDE RADAR IMPROVEMENTS	0	0	0	0	0	0
TOWERS	257(84)	RPLCE TPX-42 TRMNL DPATA SYST	0	0	33333	0	0	0
TOWERS	258(84)	EDS FOR ARTS IIIA FACILITIES	0	0	8922	0	0	0
TOWERS	259(84)	ESTABLISH/REPLACE FDIO EQPT	0	0	0	0	0	0
TOWERS	260(84)	PROVIDE ARTS IIIA MEMORY	0	0	0	0	0	0
TOWERS	264(84)	MODERN/IMPROV TRMNL FACILITIES	0	0	0	6446	0	0
TOWERS	265(84)	RPLC E & M CHNL VOICE RECORDERS	0	0	0	0	0	0
TOWERS	266,84	PROVIDE TRMNL IN-SERVICE ENGR	0	0	0	0	0	0
TOWERS	140(85)	RPLC MULTICHNL VOICE RECORDERS	0	0	0	18300	0	0
TOWERS	141(85)	REPLACE ATIS RECORDERS	0	0	0	11171	0	0
TOWERS	142 85	LEAD SECTOR MAINTENANCE PRGRM	0	0	0	5000	0	0
TOWERS	151 85	DIGITAL TIME CODE READERS	0	0	0	386	0	0
TOWERS	152(85)	PROVIDE DABI EQUIPMENT	0	0	0	1354	0	0
TOWERS		TOTAL	97583	0	3.0.83	93857	0	645

F&E DATABASE (cont.)

FSS	267(84)	FSS	0	142633	0	0	0	0
AIRNAV	217	VOR, DME, VORTAC REPLACEMENT	0	0	0	9624	0	0
AIRNAV	218	LORAN-C	0	0	0	0	0	0
AIRNAV	219	NM-DIRECTIONAL RADIO BEACON	0	0	0	11020	0	0
AIRNAV	220	MLS AND MALSR	0	0	42575	0	0	0
AIRNAV	221	APPROACH LIGHTING SYSTEM	15396	0	0	0	0	0
AIRNAV	222	AWOS	0	0	0	0	0	0
AIRNAV	223	WINDGEAR	0	0	0	0	0	0
AIRNAV	224	RUNWAY END LIGHTS	0	0	0	4074	0	0
AIRNAV	225	PRECISION APPROACH PATH	0	0	3610	0	0	0
AIRNAV	226	STRAIGHT-IN, NON-PREC. APPRCH.	0	0	0	3110	0	0
AIRNAV	227	THRESHOLD LIGHTS	0	0	0	3375	0	0
AIRNAV	228	RUNWAY VISUAL RANGE	12363	0	0	0	0	0
AIRNAV	229	AIRPORT APPRCH/LANDING AID FAC.	0	0	5100	0	0	0
AIRNAV	273(84)	EST VISUAL APPRCH SLOPE INDIC	0	0	0	0	0	0
AIRNAV	280(84)	IMPROVE ILS FACILITIES	0	0	0	0	0	0
AIRNAV	280(84)	IMPROVE VISUAL AID FACILITIES	0	0	0	0	0	0
AIRNAV	281(84)	PROVDE ADD'L FACILITIES TO ILS	0	0	0	0	0	0
AIRNAV	282(84)	PRECISION LANDING AID IMPRVMNTS	0	0	0	0	0	0
AIRNAV	NA(84)	ESTABLISH ILS	0	0	0	0	0	0
AIRNAV	NA(85)	MALSR W/ RWAY ALGNMT IND LGHTS	0	0	1763	0	0	0
AIRNAV	NA(85)	NAVAIDS ADDED BY CONGRESS	0	0	0	6243	0	0
AIRNAV	NA(85)	ILS POLICY CHANGE	0	0	0	31830	0	0
AIRNAV		TOTAL	28,219	0	53,048	69,280	0	0
M,O,F,	231	NAT'L RADIO COM. SYSTEM	0	0	0	0	0	31000
M,O,F,	232	UNMANNED FAA FAC. AND EQUIP.	0	0	0	9332	0	0
M,O,F,	233	AIRPORT CABLE LOOP	8860	0	0	0	0	0
M,O,F,	234	IMPROVE/REPLACE POWER SYSTEM	0	0	0	0	0	0
M,O,F,	235	CAD DESIGN SYSTEM	0	0	0	0	0	0
M,O,F,	236	ACQUIRE LAND/EASEMENTS	0	0	0	6920	0	0
M,O,F,	237	MAINTENANCE CONTROL CENTERS	0	0	0	0	0	0
M,O,F,	238	PROVIDE TEST EQUIP.	0	0	0	7221	0	0
M,O,F,	239	LOGISTICS/INVENTORY SYSTEM	0	0	0	0	0	0
M,O,F,	240	AIRPORT DATUM MONV.	0	0	0	0	0	0
M,O,F,	241	SYSTEM INTEG. SUPPORT	0	0	0	54650	0	0
M,O,F,	242	NAV AID/ATC FAC.	0	0	0	2200	0	0
M,O,F,	243	AIR NAV/ATC SYSTEM SUPPORT	0	0	0	5520	0	0
M,O,F,	244	FREQ/SPECTRUM ENGIN.	0	0	0	420	0	0
M,O,F,	266(84)	PCB TESTERS FOR MAINTNCE HUBS	0	0	0	0	0	0
M,O,F,	267(84)	MECHANIZD MATERIAL HANDLG SYST	0	0	0	6760	0	0
M,O,F,	287(84)	COMPUTER-BASED INSTRCTN SYSTMS	0	0	0	0	0	0
M,O,F,	288(84)	EXPLOSIVE DETECTION SYSTEMS	0	0	0	0	0	0
M,O,F,	NA(85)	AIR SCIENCE CORR GRANT	0	0	0	5000	0	0
M,O,F,		TOTAL	8,860	0	0	97,983	0	31,000

F&E DATABASE (cont.)

AIRCRAFT	246	AIRBORNE LORAN-C	0	0	0	0	0	0
AIRCRAFT	247	SPECTRUM ANALYZER	0	0	0	0	0	0
AIRCRAFT	248	TURBO PROP AIRCRAFT	0	0	0	0	0	0
AIRCRAFT	249	HEAD-UP IN SIMULATOR	0	0	0	0	0	0
AIRCRAFT	250	TURBO PROP AIRCRAFT	0	0	0	0	0	0
AIRCRAFT	292(84)	PROCURE AIRBORNE MLS	0	0	1000	0	0	0
AIRCRAFT	176(85)	PROCURE LASER RANGE FINDERS	0	0	700	0	0	0
AIRCRAFT		TOTAL	0	0	1700	0	0	0
D,T,E,	252	FAA TECH. CENTER LEASE	0	0	0	5090	0	0
D,T,E,	253	FIRE TEST FAC.	0	0	0	699	0	0
D,T,E,	254	INFLIGHT FIRE TEST FAC.	0	0	0	0	0	0
D,T,E,	255	AIRPORT IMPROVEMENTS	0	0	0	0	0	0
D,T,E,	256	TECH. CENTER HELIPORT	0	0	0	0	0	0
D,T,E,	257	NAS FIELD SUPPORT	0	0	0	0	0	0
D,T,E,	258	SWITCHING EQUIPMENT	0	0	0	696	0	0
D,T,E,	259	ENGIN. SERVICES EQUIP.	0	0	235	0	0	0
D,T,E,	296(84)	CONSTRCT TECH SUPPORT FACILITY	0	0	0	0	0	0
D,T,E,	297(84)	PROVIDE EPA STD COMPLIANCE CAP	0	0	0	0	0	0
D,T,E,	335(84)	ENHANCE COMPUTER LAB FACILITIES	164	0	0	0	0	0
D,T,E,	299(84)	ATCSF UPGRADE	0	0	0	0	0	0
D,T,E,	293(84)	ENHANCE NAS DOCUMENTN FACILITY	0	0	0	0	0	0
D,T,E,	300(84)	ENHANCE GEN PURPOSE COMP FACIL	0	0	0	0	0	0
D,T,E,	180(85)	ENHANCE AVIATION SECURITY LAB	539	0	0	0	0	0
D,T,E,	182(85)	POWER CONDITIONING SYSTEM	2000	0	0	0	0	0
D,T,E,	NA(85)	NAS SIMUL SUPPORT FACILITY	0	0	0	548	0	0
		TOTAL	3,573	0	235	7,233	0	0
		GRAND TOTAL	434897	148839	539461	273353	0	38461

T = TERMINAL
R = REPLACEMENT/REPAIR
I = IMPROVE SERVICE
C = CAP COSTS
E = EXPANSION
O = OA

H = HELICOPTER
L = LOCAL (WHERE)
O = OVERHEAD
P = PUBLIC INTEREST
J = JET

(1) FUNDING ENDS AFTER 1988
(2) AVERAGE OF 4000 PER YEAR
(3) AVERAGE OF 13400 PER YEAR
(4) FUNDING ENDS AT END OF 1992
(5) 5000 PER YEAR
(6) 5200 PER YEAR
(7) 3700 PER YEAR

(8) 20000 PER YEAR
(9) 8000 PER YEAR
(10) NON-RADAR TOWERS
3500 ITIN OPS
(11) 6500 PER YEAR
(12) 400 PER YEAR
(13) 1500 PER YEAR

F&E DATABASE (cont.)

F&E(1984/1985/1986 BUDGET) 13-Nov-85
464FE86

TOTAL DOLLARS(000) 1986

ACTIVITY	PROJ	PROGRAM	AIR CARR.	GA	NOT MFR	ALL CRITERIA	ESTAB	PI
ARTCC	131	LONG RANGE RADAR	0	0	46200	0	0	0
ARTCC	132	RADAR MICROWAVE LINK	0	0	63780	0	0	0
ARTCC	133	NEXT GEN. WEATHER RADAR	4300	0	0	0	0	0
ARTCC	134	ATC RADAR BEACON SYSTEM	0	0	6454	0	0	0
ARTCC	135	UPGRADE ATC EN ROUTE RADAR	0	0	2237	0	0	0
ARTCC	136	HOST COMPUTER	28536	0	0	0	0	0
ARTCC	137	ADVANCED AUTOMATION SYSTEM	12720	0	0	0	0	0
ARTCC	138	CON. FACILITY CONSOLID.	0	0	0	11869	0	0
ARTCC	139	ARTCC BUILDINGS/PLANT	0	0	11554	0	0	0
ARTCC	220	DATA MULTIPLEXING NETWORK	0	0	4000	0	0	0
ARTCC	221	UPGRADE TRAFFIC MANAG.	0	0	5700	0	0	0
ARTCC	222	IMPROVE EN ROUTE COM.	0	0	4555	0	0	0
ARTCC	244(84)	PROVIDE RML TRUNKING	0	0	0	0	0	0
ARTCC	246(84)	PROVIDE CENTER WEATHER PROC.	0	0	0	0	0	0
ARTCC	248(84)	CNFLCT ALRT/MIN SAFE ALT WRNG	0	0	0	0	0	0
ARTCC	245(84)	EN RTE AUTOMATION HRDWRE IMPRV	0	0	0	0	0	0
ARTCC	249(84)	REPLACE ARTCC/NORAD TIME EQPT	0	0	0	0	0	0
ARTCC	250(84)	INTEGRATE NOARDR APPRCH CNTRLS	0	0	0	0	0	0
ARTCC	252(84)	PROVIDE RADIO ENHANCEMENTS	0	0	0	0	0	0
ARTCC	251(84)	PROVIDE ARTCC CONSOLIDATION	0	0	0	0	0	0
ARTCC	253(84)	IN-SERVICE COMM IMPROVEMENTS	0	0	0	0	0	0
ARTCC		TOTAL	57.556	0	151.592	11.869	0	0
TOWERS	204	REPLACE AIRPORT SURVEIL. RADAR	0	0	157810	0	0	0
TOWERS	205	AIRPORT SURFACE DETECTION	51556	0	0	0	0	0
TOWERS	206	AIRPORT SURVEIL. RADAR	0	0	5000	0	0	0
TOWERS	207	TERMINAL RADAR SYSTEM	0	0	6245	0	0	0
TOWERS	208	SUSTAIN NEW YORK TRACON	31400	0	0	0	0	0
TOWERS	209	LAB REMOTE MONITORING	0	0	0	72049	0	0
TOWERS	210	ESTAB. CONTROL TOWER	0	0	0	0	0	1992
TOWERS	211	REPLACE TERMINAL FACILITIES	57129	0	0	0	0	0
TOWERS	212	MODERN. RADAR APPROACH FACIL.	11974	0	0	0	0	0
TOWERS	213	INTEG. COM. SWITCH SYSTEM	0	0	0	39645	0	0
TOWERS	[illegible]	REPLACE BRITE EQUIP.	44300	0	0	0	0	0
TOWERS	[illegible]	IMPROVE TERMINAL COM.	0	0	0	7254	0	0
TOWERS	[illegible]	MODES SURVEILLANCE & DTA LINK	0	0	0	0	0	0
TOWERS	[illegible]	PROVIDE RADAR IMPROVEMENTS	0	0	0	0	0	0
TOWERS	[illegible]	[illegible] TPX-42 TRML CNTRL SYST	0	0	0	0	0	0
TOWERS	[illegible]	EOS FOR ARTS IIIA FACILITIES	0	0	0	0	0	0
TOWERS	[illegible]	ESTABLISH/REPLACE FDIO EQPT	0	0	0	0	0	0
TOWERS	[illegible](84)	PROVIDE ARTS IIIA MEMORY	0	0	0	0	0	0
TOWERS	[illegible](84)	MODERN/IMPROV TRML FACILITIES	0	0	0	0	0	0
TOWERS	[illegible](84)	REPL 5 & 9 CHNL VOICE RECORDERS	0	0	0	0	0	0
TOWERS	[illegible]	PROVIDE TRML IN-SERVICE ENGR	0	0	0	0	0	0
TOWERS	[illegible]	REPL MULTICHNL VOICE RECORDERS	0	0	0	0	0	0
TOWERS	[illegible]	REPLACE ATIS RECORDERS	0	0	0	0	0	0
TOWERS	[illegible]	LEAD SECTOR MAINTENANCE PRGRM	0	0	0	0	0	0
TOWERS	[illegible]	DIG TAL TIME CODE READERS	0	0	0	0	0	0
TOWERS	[illegible] 85	PROVIDE DASI EQUIPMENT	0	0	0	0	0	0
TOWERS		TOTAL	196361	0	181856	119948	0	1992

F&E DATABASE (cont.)

FSS	267(84)	FSS	0	0	0	0	0	0
AIRNAV	217	VOR, DME, VORTAC REPLACEMENT	0	0	0	21260	0	0
AIRNAV	218	LORAN-C	0	5000	0	0	0	0
AIRNAV	219	NM-DIRECTIONAL RADIO BEACON	0	0	0	603	0	0
AIRNAV	220	MLS AND MALSR	0	0	46685	0	0	0
AIRNAV	221	APPROACH LIGHTING SYSTEM	24549	0	0	0	0	0
AIRNAV	222	AWOS	0	27225	0	0	0	0
AIRNAV	223	WINDSHEAR	19666	0	0	0	0	0
AIRNAV	224	RUNWAY END LIGHTS	0	0	0	4938	0	0
AIRNAV	225	PRECISION APPROACH PATH	0	0	2566	0	0	0
AIRNAV	226	STRAIGHT-IN, NON-PREC. APPRCH.	0	0	0	1881	0	0
AIRNAV	227	THRESHOLD LIGHTS	0	0	0	1332	0	0
AIRNAV	228	RUNWAY VISUAL RANGE	6232	0	0	0	0	0
AIRNAV	229	AIRPORT APPRCH/LANDING AID FAC.	0	0	2610	0	0	0
AIRNAV	279(84)	EST VISUAL APPRCH SLOPE INDIC	0	0	0	0	0	0
AIRNAV	282(84)	IMPROVE ILS FACILITIES	0	0	0	0	0	0
AIRNAV	280(84)	IMPROVE VISUAL AID FACILITIES	0	0	0	0	0	0
AIRNAV	281(84)	PRVDE ADD'L FACILITIES TO ILS	0	0	0	0	0	0
AIRNAV	283(84)	PRECISION LANDING AID IMPRVMNTS	0	0	0	0	0	0
AIRNAV	NA(84)	ESTABLISH ILS	0	0	0	0	0	0
AIRNAV	NA(85)	MALSR W/ RWAY ALGNMNT IND LGHTS	0	0	0	0	0	0
AIRNAV	NA(85)	NAVAIDS ADDED BY CONGRESS	0	0	0	0	0	0
AIRNAV	NA(85)	ILS POLICY CHANGE	0	0	0	0	0	0
AIRNAV		TOTAL	50,669	32,225	53,261	30,014	0	0
[illegible]	231	NAT'L RADIO COM. SYSTEM	0	0	0	0	0	15700
[illegible]	232	UNMANNED FAA FAC. AND EQUIP.	0	0	0	32734	0	0
[illegible]	233	AIRPORT CABLE LOOP	17248	0	0	0	0	0
[illegible]	234	IMPROVE/REPLACE POWER SYSTEM	0	0	0	6443	0	0
[illegible]	235	CAD DESIGN SYSTEM	0	0	0	10000	0	0
[illegible]	236	ACQUIRE LAND/EASEMENTS	0	0	0	11200	0	0
[illegible]	237	MAINTENANCE CONTROL CENTERS	0	0	0	11000	0	0
[illegible]	238	PROVIDE TEST EQUIP.	0	0	0	3650	0	0
[illegible]	239	LOGISTICS/INVENTORY SYSTEM	0	0	0	3000	0	0
[illegible]	240	AIRPORT DATL MONT.	0	0	1000	0	0	0
[illegible]	241	SYSTEM INTEG. SUPPORT	0	0	0	67200	0	0
[illegible]	242	NAV AID/ATC FAC.	0	0	0	2300	0	0
[illegible]	243	AIR NAV/ATC SYSTEM SUPPORT	0	0	0	5800	0	0
[illegible]	244	FREQ/SPECTRUM ENGIN.	0	0	0	650	0	0
[illegible]	[illegible(84)]	POE TESTERS FOR MAINTNCE HUBS	0	0	0	0	0	0
[illegible]	[illegible(84)]	MECHANIZED MATERIAL HANDLG SYST	0	0	0	0	0	0
[illegible]	[illegible(84)]	COMPUTER-BASED INSTRCTN TRMNLS	0	0	0	0	0	0
[illegible]	[illegible(84)]	EXPLOSIVE DETECTION SYSTEMS	0	0	0	0	0	0
[illegible]	NA(85)	AIR SCIENCE CURR GRANT	0	0	0	0	0	0
[illegible]		TOTAL	17,248	0	1,000	154,777	0	15,700

F&E DATABASE (cont.)

AIRCRAFT	246	AIRBORNE LORAN-C	0	1500	0	0	0	0
AIRCRAFT	247	SPECTRUM ANALYZER	0	0	0	1125	0	0
AIRCRAFT	248	TURBO PROP AIRCRAFT	0	0	0	4433	0	0
AIRCRAFT	249	HEAD-UP IN SIMULATOR	150	0	0	0	0	0
AIRCRAFT	250	TURBO PROP AIRCRAFT	0	0	0	13300	0	0
AIRCRAFT	292(84)	PROCURE AIRBORNE MLS	0	0	0	0	0	0
AIRCRAFT	170(85)	PROCURE LASER RANGE FINDERS	0	0	0	0	0	0
AIRCRAFT		TOTAL	150	1500	0	18856	0	0
D,T,E,	251	FAA TECH. CENTER LEASE	0	0	0	5290	0	0
D,T,E,	253	FIRE TEST FAC.	0	0	0	875	0	0
D,T,E,	254	INFLIGHT FIRE TEST FAC.	1400	0	0	0	0	0
D,T,E,	255	AIRPORT IMPROVEMENTS	1823	0	0	0	0	0
D,T,E,	256	TECH. CENTER HELIPORT	0	500	0	0	0	0
D,T,E	257	NAS FIELD SUPPORT	0	0	736	0	0	0
D,T,E,	258	SWITCHING EQUIPMENT	0	0	0	220	0	0
D,T,E,	259	ENGIN. SERVICES EQUIP.	0	0	275	0	0	0
D,T,E,	296(84)	CONSTRCT TECH SUPPORT FACILITY	0	0	0	0	0	0
D,T,E.	297(84)	PROVIDE EPA STD COMPLIANCE CAP	0	0	0	0	0	0
D,T,E,	298(84)	ENHANCE COMPUTER LAB FACILITIES	0	0	0	0	0	0
D,T,E.	298(84)	ATCSF UPGRADE	0	0	0	0	0	0
D,T,E,	299(84)	ENHANCE NAS DOCUMENT'N FACILITY	0	0	0	0	0	0
D,T,E.	300(84)	ENHANCE GEN PURPOSE COMP FACIL	0	0	0	0	0	0
D,T,E.	180(85)	ENHANCE AVIATION SECURITY LAB	0	0	0	0	0	0
D,T,E.	183(85)	POWER CONDITIONING SYSTEM	0	0	0	0	0	0
D,T,E.	[illegible](85)	NAS SIMUL SUPPORT FACILITY	0	0	0	0	0	0
D,T,E.		TOTAL	3,223	500	1,011	6,385	0	0
GRAND TOTAL			365207	34225	367838	340971	0	11592

T = TERMINAL
R = REPLACEMENT/REPAIR
I = IMPROVE SERVICE
C = CUT COSTS
E = EXPANSION
S = [illegible]

H = HELICOPTER
L = LOCAL (WHERE)
O = OVERHEAD
P = PUBLIC INTEREST
J = JET

(1) FUNDING ENDS AFTER 1988
(2) AVERAGE OF 4000 PER YEAR
(3) AVERAGE OF 13400 PER YEAR
(4) FUNDING ENDS AT END OF 1990
(5) 5000 PER YEAR
(6) 5200 PER YEAR
(7) 2700 PER YEAR
(8) 20000 PER YEAR
(9) 8300 PER YEAR
(10) NON-RADAR TOWERS >3500 ITIN OPS
(11) 6500 PER YEAR
(12) 400 PER YEAR
(13) 1500 PER YEAR

F&E DATABASE (cont.)

F&E(1984/1985/1986 BUDGET)   13-Nov-85
464FE87

TOTAL DOLLARS(000) 1987-1992

ACTIVITY	PAGE	PROGRAM	AIR CARR.	GA	NOT VFR	ALL CRITERIA	ESTAB	PI
ARTCC	191	LONG RANGE RADAR	0	0	392100	0	0	0
ARTCC	192	RADAR MICROWAVE LINK	0	0	121600	0	0	0
ARTCC	193	NEXT GEN. WEATHER RADAR	248600	0	0	0	0	0
ARTCC	194	ATC RADAR BEACON SYSTEM	0	0	0	0	0	0
ARTCC	195	IMPROVE ATC EN ROUTE RADAR	0	0	24000	0	0	0
ARTCC	196	HOST COMPUTER	6000	0	0	0	0	0
ARTCC	197	ADVANCED AUTOMATION SYSTEM	2572000	0	0	0	0	0
ARTCC	198	COM. FACILITY CONSOLID.	0	0	0	65500	0	0
ARTCC	199	ARTCC BUILDINGS/PLANT	0	0	80400	0	0	0
ARTCC	200	DATA MULTIPLEXING NETWORK	0	0	16000	0	0	0
ARTCC	201	UPGRADE TRAFFIC MANAG.	0	0	9700	0	0	0
ARTCC	202	IMPROVE EN ROUTE COM.	0	0	34600	0	0	0
ARTCC	244(84)	PROVIDE RML TRUNKING	0	0	0	0	0	0
ARTCC	246(84)	PROVIDE CENTER WEATHER PROC.	0	0	0	0	0	0
ARTCC	249(84)	CNFLCT ALRT/MIN SAFE ALT WRNG	0	0	0	0	0	0
ARTCC	245(84)	EN RTE AUTOMATION HRDWRE IMPRV	0	0	0	0	0	0
ARTCC	247(84)	REPLACE ARTCC/RCAG TONE EQPT	0	0	0	0	0	0
ARTCC	250(84)	INTEGRATE NONRDR APPRCH CNTRLS	0	0	0	0	0	0
ARTCC	252(84)	PROVIDE NADIN ENHANCEMENTS	0	0	0	0	0	0
ARTCC	251(84)	PROVIDE ARTCC CONSOLIDATION	0	0	0	0	0	0
ARTCC	253(84)	IN-SERVICE COMM IMPROVEMENTS	0	0	0	0	0	0
ARTCC		TOTAL	2,626,600	0	678,600	65,500	0	0
[illegible]	204	REPLACE AIRPORT SURVEIL. RADAR	0	0	125.00	0	0	0
[illegible]	205	AIRPORT SURFACE DETECTION	0	0	0	0	0	0
[illegible]	206	AIRPORT SURVEIL. RADAR	0	0	35000	0	0	0
[illegible]	207	TERMINAL RADAR SYSTEM	0	0	30000	0	0	0
[illegible]	208	SUBTRCN NEW YORK TRACON	0	0	0	0	0	0
[illegible]	209	VAS REMOTE MONITORING	0	0	0	195500	0	0
[illegible]	210	ESTAB. CONTROL TOWER	0	0	0	0	0	16200
[illegible]	211	REPLACE TERMINAL FACILITIES	120000	0	0	0	0	0
[illegible]	212	MODERN. RADAR APPROACH FACIL.	49500	0	0	0	0	0
[illegible]	213	INTEG. COM. SWITCH SYSTEM	0	0	0	3100	0	0
[illegible]	214	REPLACE BRITE EQUIP.	0	0	0	0	0	0
[illegible]	215	IMPROVE TERMINAL COM.	0	0	0	33000	0	0
[illegible]	[illegible]	MODE S SURVEILLANCE & DTA LINK	0	0	0	0	0	0
[illegible]	[illegible]	PROVIDE RADAR IMPROVEMENTS	0	0	0	0	0	0
[illegible]	[illegible]	RPLCE TPX-42 TRMNL CMPTR SYST	0	0	0	0	0	0
[illegible]	[illegible]	??? FOR ARTS IIIA FACILITIES	0	0	0	0	0	0
[illegible]	[illegible]	ESTABLISH/REPLACE FDIO EQPT	0	0	0	0	0	0
[illegible]	[illegible]	PROVIDE ARTS IIIA MEMORY	0	0	0	0	0	0
[illegible]	[illegible]	MODERN/IMPROV TRMNL FACILITIES	0	0	0	0	0	0
[illegible]	[illegible]	RPLC 3 & 9 CHNL VOICE RECORDERS	0	0	0	0	0	0
[illegible]	[illegible]	PROVIDE TRMNL IN-SERVICE ENGR	0	0	0	0	0	0
[illegible]	[illegible]	RPLC MULTICHNL VOICE RECORDERS	0	0	0	0	0	0
[illegible]	[illegible]	REPLACE ATIS RECORDERS	0	0	0	0	0	0
[illegible]	[illegible]	[illegible] SECTOR MAINTENANCE PRGRM	0	0	0	0	0	0
[illegible]	[illegible]	DIGITAL TIME CODE READERS	0	0	0	0	0	0
[illegible]	[illegible]	PROVIDE DASI EQUIPMENT	0	0	0	0	0	
[illegible]		TOTAL	169000	0	191100	237500	0	1620

F&E DATABASE (cont.)

FSS	267(84)	FSS	0	0	0	0	0	0
AIRNAV	217	VOR, DME, VORTAC REPLACEMENT	0	0	0	125800	0	0
AIRNAV	218	LORAN-C	0	0	0	0	0	0
AIRNAV	219	OMNI-DIRECTIONAL RADIO BEACON	0	0	0	2400	0	0
AIRNAV	220	ILS AND MALSR	0	0	620800	0	0	0
AIRNAV	221	APPROACH LIGHTING SYSTEM	62100	0	0	0	0	0
AIRNAV	222	AWOS	0	103400	0	0	0	0
AIRNAV	223	WINDSHEAR	4700	0	0	0	0	0
AIRNAV	224	RUNWAY END LIGHTS	0	0	0	34900	0	0
AIRNAV	225	PRECISION APPROACH PATH	0	0	23000	0	0	0
AIRNAV	226	STRAIGHT-IN, NON-PREC. APPRCH.	0	0	0	15000	0	0
AIRNAV	227	THRESHOLD LIGHTS	0	0	0	13100	0	0
AIRNAV	228	RUNWAY VISUAL RANGE	24200	0	0	0	0	0
AIRNAV	229	AIRPORT APPROP/LANDING AID PRC.	0	0	9000	0	0	0
AIRNAV	273(84)	EST VISUAL APPROH SLOPE INDIC	0	0	0	0	0	0
AIRNAV	263(84)	IMPROVE ILS FACILITIES	0	0	0	0	0	0
AIRNAV	282(84)	IMPROVE VISUAL AID FACILITIES	0	0	0	0	0	0
AIRNAV	281(84)	PROVDE ADD'L FACILITIES TO ILS	0	0	0	0	0	0
AIRNAV	283(84)	PRECISION LANDING AID IMPRVMNTS	0	0	0	0	0	0
AIRNAV	NA(84)	ESTABLISH ILS	0	0	0	0	0	0
AIRNAV	NA(85)	MASLR W/ RWAY ALGNMT IND LG-TS	0	0	0	0	0	0
AIRNAV	NA(EE)	NAVAIDS ADDED BY CONGRESS	0	0	0	0	0	0
AIRNAV	NA(85)	ILS POLICY CHANGE	0	0	0	0	0	0
AIRNAV		TOTAL	91,000	103,400	649,800	187,200	0	0
FACILITIES	231	NAT'L RADIO COM. SYSTEM	0	0	0	0	0	37000
FACILITIES	232	UNMANNED FAA FAC. AND EQUIP.	0	0	0	85200	0	0
FACILITIES	233	AIRPORT CABLE LOOP	86800	0	0	0	0	0
FACILITIES	234	IMPROVE/REPLACE POWER SYSTEM	0	0	0	42000	0	0
FACILITIES	235	CAD DESIGN SYSTEM	0	0	0	0	0	0
FACILITIES	236	REQUIRE LAND/EASEMENTS	0	0	0	39700	0	0
FACILITIES	237	MAINTENANCE CONTROL CENTERS	0	0	0	0	0	0
FACILITIES	238	PROVIDE TEST EQUIP.	0	0	0	28900	0	0
FACILITIES	239	LOGISTICS/INVENTORY SYSTEM	0	0	0	0	0	0
FACILITIES	240	AIRPORT DATUM MONV.	0	0	7000	0	0	0
FACILITIES	241	SYSTEM INTEG. SUPPORT	0	0	0	491700	0	0
FACILITIES	242	NAV AID/ATC FAC.	0	0	0	15000	0	0
FACILITIES	243	A/F NAV/ATC SYSTEM SUPPORT	0	0	0	40500	0	0
FACILITIES	244	FREQ/SPECTRUM ENGIN.	0	0	0	5900	0	0
FACILITIES	286 84	AIR TESTERS FOR MAINTANCE NEED	0	0	0	0	0	0
FACILITIES	287 84	MECHANIZED MATERIAL HANDLG SYST	0	0	0	0	0	0
FACILITIES	287(84)	COMPUTER-BASED INSTRCTN TRNALS	0	0	0	0	0	0
FACILITIES	288(84)	EXPLOSIVE DETECTION SYSTEMS	0	0	0	0	0	0
FACILITIES	A.85)	AIR SCIENCE CURR GRANT	0	0	0	0	0	0
FACILITIES		TOTAL	86,800	0	7,000	738,900	0	37,000

F&E DATABASE (cont.)

AIRCRAFT	246	AIRBORNE LORAN-C	0	0	0	0	0	0
AIRCRAFT	247	SPECTRUM ANALYZER	0	0	0	0	0	0
AIRCRAFT	248	TURBO PROP AIRCRAFT	0	0	0	0	0	0
AIRCRAFT	249	HEAD-UP IN SIMULATOR	0	0	0	0	0	0
AIRCRAFT	250	TURBO PROP AIRCRAFT	0	0	0	0	0	0
AIRCRAFT	252(84)	PROCURE AIRBORNE MLS	0	0	0	0	0	0
AIRCRAFT	176(85)	PROCURE LASER RANGE FINDERS	0	0	0	0	0	0
AIRCRAFT		TOTAL	0	0	0	0	0	0
D,T,E,	251	FAA TECH. CENTER LEASE	0	0	0	31742	0	0
D,T,E,	252	FIRE TEST FAC.	0	0	0	0	0	0
D,T,E,	254	INFLIGHT FIRE TEST FAC.	0	0	0	0	0	0
D,T,E,	255	AIRPORT IMPROVEMENTS	3776	0	0	0	0	0
D,T,E,	256	TECH. CENTER HELIPORT	0	0	0	0	0	0
D,T,E,	257	NAS FIELD SUPPORT	0	0	0	0	0	0
D,T,E,	258	SWITCHING EQUIPMENT	0	0	0	0	0	0
D,T,E,	259	ENGIN. SERVICES EQUIP.	0	0	1500	0	0	0
D,T,E,	296(84)	CONSTRCT TECH SUPPORT FACILITY	0	0	0	0	0	0
D,T,E,	297(84)	PROVIDE EPA STD COMPLIANCE CAP	0	0	0	0	0	0
D,T,E,	298(84)	ENHANCE COMPUTER LAB FACILITIES	0	0	0	0	0	0
D,T,E,	296(84)	ATOSF UPGRADE	0	0	0	0	0	0
D,T,E,	299(84)	ENHANCE NAS DOCUMENTN FACILITY	0	0	0	0	0	0
D,T,E,	302(84)	ENHANCE GEN PURPOSE COMP FACIL	0	0	0	0	0	0
D,T,E,	183(85)	ENHANCE AVIATION SECURITY LAB	0	0	0	0	0	0
D,T,E,	183(85)	POWER CONDITIONING SYSTEM	0	0	0	0	0	0
D,T,E,	184(85)	NAS SIMUL SUPPORT FACILITY	0	0	0	0	0	0
D,T,E,		TOTAL	3,776	0	1,500	31,740	0	0
GRAND TOTAL			3179976	183422	1528220	1281942	0	43422

T = TERMINAL
R = REPLACEMENT/REPAIR
I = IMPROVE SERVICE
O = O&T COSTS
E = EXPANSION
D = D-

H = HELICOPTER
L = LOCAL (WHERE)
O = OVERHEAD
P = PUBLIC INTEREST
J = JET

(1) FUNDING ENDS AFTER 1988
(2) AVERAGE OF 4000 PER YEAR
(3) AVERAGE OF 13400 PER YEAR
(4) FUNDING ENDS AT END OF 1990
(5) 5622 PER YEAR
(6) 5202 PER YEAR
(7) 2700 PER YEAR
(8) 20000 PER YEAR
(9) 8322 PER YEAR
(10) NON-RADAR TOWERS
(11) 6500 PER YEAR
(12) 420 PER YEAR
(13) 1500 PER YEAR

3.4 R&D

The R&D budgets were based upon the 1987 R&D budget. Individual R&D projects for the period 1984 through 1992 were allocated in the following categories:

- air carriers,
- general aviation,
- IFR users (denoted as "not VFR" in the table),
- all users.

The following tables show the specific allocations.

R&D DATABASE

R,E&D 1987 BUDGET 11-Nov-85
464RD

ACTIVITY	PAGE	PROGRAM	TOTAL DOLLARS(000)1984-1992 AIR CARR.	GA	NOT VFR	ALL
ATC	3	SYS. ENGIN. INTEG.	0	0	0	49302
ATC	4	SYS. ENGIN. ANAL.	0	0	0	15946
ATC	5	SYS. REQUIRE-MENTS-B-C	0	0	0	2901
ATC	7	SYS. REQUIRE-CAP, SEPAR., NAV	0	0	0	44373
ATC	9	ADVANCED SYS. CONCEPTS	164935	0	0	0
ATC		TOTAL	164935	0	0	112517
BEACON	34,184	MODE-S SURVEILLANCE	0	0	3275	0
NOSER	11	TCAS	22533	0	0	0
COM	14	COMMUN.-MISC.	21186	0	0	0
COM	16	COMMUN.-VSCS	0	0	71955	0
COM		TOTAL	21186	0	71955	0
AIRPORT	17	AIRPORT	66992	0	0	0
EN ROUTE	19	EN ROUTE EXPER.	0	0	6105	0
FSS	22	FSS	0	41064	0	0
TERM/TOWE	21	TERM/TOWER	0	0	0	15000
TECH	33	HUMAN FACTORS	0	0	3899	0
TECH	24	ADVANCED TECH	48911	0	0	0
TECH	26	LONG RANGE RESEARCH	0	0	0	120849
TECH		TOTAL	48911	0	3899	120849
OTHER	27	OTHER R&D	0	0	0	37126
ADV AUTO	31	HOST COMPUTER	92345	0	0	0
ADV AUTO	32	ADV. AUTOMATION SYSTEMS	407379	0	0	0
ADV AUTO		TOTAL	499724	0	0	0
NAV	35	NAVIGATION	0	0	38466	0
APP/LAND	37	APPROACH/LAND	26569	0	0	0

R&D DATABASE (cont.)

WEATHER	41	NAS WEATHER	0	0	0	61379
WEATHER	43	DOPPLER	36094	0	0	0
WEATHER	45	WEATHER RADAR	24339	0	0	0
WEATHER		TOTAL	60433	0	0	61379
MEDICINE	49	AEROMED. SUPPORT	0	0	0	12565
MEDICINE	51	PROTECT & SURVIVE	0	0	0	22378
MEDICINE	52	WORKFORCE OPT.	0	0	0	15244
MEDICINE	53	HUMAN PERF.	0	0	0	4566
MEDICINE		TOTAL	0	0	0	53753
A/C SAFET	57	FIRE SAFETY	35238	0	0	0
A/C SAFET	59	CRASHWORTHINESS	0	0	0	28756
A/C SAFET	61	PROPULSION	0	0	0	18872
A/C SAFET	62	FLIGHT SAFETY	0	0	25589	0
A/C SAFET	64	RES. DEVELOP. SUPPORT	0	0	0	21453
A/C SAFET	66	AVIATION SECURITY	52103	0	0	0
A/C SAFETY		TOTAL	87341	0	25589	69081
ENVIRON	72	A/C EMISSIONS	4607	0	0	0
ENVIRON	73	A/C NOISE	0	0	0	21100
ENVIRON		TOTAL	4607	0	0	21100
GRAND TOTAL			1221231	41064	141046	489625

R&D DATABASE (cont.)

R,E&D 1987 BUDGET 11-Nov-85
4E4R084

ACTIVITY	PAGE	PROGRAM	TOTAL DOLLARS(000) 1984 AIR CARR.	GA	NOT VFR	ALL
ATC	3	SYS. ENGIN. INTEG.	0	0	0	1500
ATC	4	SYS. ENGIN. ANAL.	0	0	0	585
ATC	5	SYS. REQUIRE-MENTS-B-C	0	0	0	61
ATC	7	SYS. REQUIRE-CAP, SEPAR., NAV	0	0	0	4379
ATC	9	ADVANCED SYS. CONCEPTS	12318	0	0	0
ATC		TOTAL	12318	0	0	7024
BEACON	34(84)	MODE-S SURVEILLANCE	0	0	2867	0
NOSER	11	TCAS	9836	0	0	0
COM	14	COMMUN.-MISC.	5031	0	0	0
COM	16	COMMUN.-VSCS	0	0	3523	0
COM		TOTAL	5031	0	3523	0
AIRPORT	17	AIRPORT	3878	0	0	0
EN ROUTE	19	EN ROUTE EXPER.	0	0	1532	0
FSS	20	FSS	0	4450	0	0
TERM/TOWE	21	TERM/TOWER	0	0	0	1132
TECH	23	HUMAN FACTORS	0	0	1152	0
TECH	24	ADVANCED TECH	3984	0	0	0
TECH	26	LONG RANGE RESEARCH	0	0	0	0
TECH		TOTAL	3984	0	1152	0
SUPPORT	27	OTHER R&D	0	0	0	2634
ADV AUTO	31	HOST COMPUTER	52045	0	0	0
ADV AUTO	32	ADV. AUTOMATION SYSTEMS	95020	0	0	0
ADV AUTO		TOTAL	147365	0	0	0
NAV	35	NAVIGATION	0	0	1773	0
APP/LAND	37	APPROACH/LAND	3635	0	0	0

<u>R&D DATABASE (cont.)</u>

WEATHER	41	NAS WEATHER	0	0	0	6892
WEATHER	43	DOPPLER	8427	0	0	0
WEATHER	45	WEATHER RADAR	220	0	0	0
WEATHER		TOTAL	8647	0	0	6892
MEDICINE	49	AEROMED. SUPPORT	0	0	0	967
MEDICINE	51	PROTECT & SURVIVE	0	0	0	1326
MEDICINE	52	WORKFORCE OPT.	0	0	0	1733
MEDICINE	53	HUMAN PERF.	0	0	0	373
MEDICINE		TOTAL	0	0	0	4399
A/C SAFET	57	FIRE SAFETY	2555	0	0	0
A/C SAFET	59	CRASHWORTHINESS	0	0	0	4025
A/C SAFET	61	PROPULSION	0	0	0	1315
A/C SAFET	62	FLIGHT SAFETY	0	0	3255	0
A/C SAFET	64	REG. DEVELOP. SUPPORT	0	0	0	0
A/C SAFET	65	AVIATION SECURITY	2598	0	0	0
A/C SAFETY		TOTAL	5153	0	3255	5340
ENVIRON	70	A/C EMISSIONS	250	0	0	0
ENVIRON	72	A/C NOISE	0	0	0	1679
ENVIRON		TOTAL	250	0	0	1679
GRAND TOTAL			193795	4450	14110	38062

R&D DATABASE (cont.)

R,E&D 1987 BUDGET
464RD85

11-Nov-85

ACTIVITY	PAGE	PROGRAM	TOTAL DOLLARS(000) 1985 AIR CARR.	GA	NOT VFR	ALL
ATC	3	SYS. ENGIN. INTEG.	0	0	0	6000
ATC	4	SYS. ENGIN. ANAL.	0	0	0	1741
ATC	5	SYS. REQUIRE-MENTS-B-C	0	0	0	268
ATC	7	SYS. REQUIRE-DEP, SEPAR., NAV	0	0	0	3593
ATC	9	ADVANCED SYS. CONCEPTS	11873	0	0	0
ATC		TOTAL	11873	0	0	13624
BEACON	341(84)	MODE-S SURVEILLANCE	0	0	486	0
NCSEP	11	TCAS	6505	0	0	0
COM	14	COMMUN.-MISC.	5912	0	0	0
COM	16	COMMUN.-VSCS	0	0	3288	0
COM		TOTAL	5912	0	3288	0
AIRPORT	17	AIRPORT	3205	0	0	0
EN ROUTE	19	EN ROUTE EXPER.	0	0	1662	0
FSS	20	FSS	0	5104	0	0
TERM/TOWE	21	TERM/TOWER	0	0	0	1787
TECH	23	HUMAN FACTORS	0	0	562	0
TECH	24	ADVANCED TECH	3688	0	0	0
TECH	26	LONG RANGE RESEARCH	0	0	0	0
TECH		TOTAL	3688	0	562	0
SUPPORT	27	OTHER R&D	0	0	0	3483
ADV AUTO	31	HOST COMPUTER	32426	0	0	0
ADV AUTO	32	ADV. AUTOMATION SYSTEMS	120332	0	0	0
ADV AUTO		TOTAL	152758	0	0	0
NAV	35	NAVIGATION	0	0	2211	0
APP/LAND	37	APPROACH/LAND	3853	0	0	0

R&D DATABASE (cont.)

WEATHER	41	NAS WEATHER	0	0	0	9136
WEATHER	43	DOPPLER	6346	0	0	0
WEATHER	45	WEATHER RADAR	0	0	0	0
WEATHER		TOTAL	6346	0	0	9136
MEDICINE	49	AEROMED. SUPPORT	0	0	0	1862
MEDICINE	51	PROTECT & SURVIVE	0	0	0	1582
MEDICINE	52	WOR/FORCE OPT.	0	0	0	1516
MEDICINE	53	HUMAN PERF.	0	0	0	519
MEDICINE		TOTAL	0	0	0	4599
A/C SAFET	57	FIRE SAFETY	3664	0	0	0
A/C SAFET	59	CRASHWORTHINESS	0	0	0	3453
A/C SAFET	61	PROPULSION	0	0	0	1029
A/C SAFET	62	FLIGHT SAFETY	0	0	2129	0
A/C SAFET	64	REG. DEVELOP. SUPPORT	0	0	0	0
A/C SAFET	68	AVIATION SECURITY	3937	0	0	0
A/C SAFETY		TOTAL	6601	0	2129	4482
ENVIRON	70	A/C EMISSIONS	375	0	0	0
ENVIRON	72	A/C NOISE	0	0	0	1625
ENVIRON		TOTAL	375	0	0	1625
GRAND TOTAL			228116	5124	16050	38716

R&D DATABASE (cont.)

R,E&D 1987 BUDGET 11-Nov-85
464RD6E

ACTIVITY	PAGE	PROGRAM	TOTAL DOLLARS(000) 1986 AIR CARR.	GA	NOT VER	ALL
ATC	3	SYS. ENGIN. INTEG.	0	0	0	7700
ATC	4	SYS. ENGIN. ANAL.	0	0	0	2310
ATC	5	SYS. REQUIRE-MENTS-B-C	0	0	0	500
ATC	7	SYS. REQUIRE-DEP. SEPAR., NAV	0	0	0	4116
ATC	9	ADVANCED SYS. CONCEPTS	14803	0	0	0
ATC		TOTAL	14803	0	0	14626
BEACON	341(84)	MODE-S SURVEILLANCE	0	0	0	0
NOSER	11	TCAS	3477	0	0	0
COM	14	COMMUN.-MISC.	1721	0	0	0
COM	16	COMMUN.-VSCS	0	0	14772	0
COM		TOTAL	1721	0	14772	0
AIRPORT	17	AIRPORT	3537	0	0	0
EN ROUTE	19	EN ROUTE EXPER.	0	0	805	0
FSS	10	FSS	0	2354	0	0
TERM/TOWE	21	TERM/TOWER	0	0	0	272
TECH	23	HUMAN FACTORS	0	0	267	0
TECH	24	ADVANCED TECH	996	0	0	0
TECH	25	LONG RANGE RESEARCH	0	0	0	0
TECH		TOTAL	996	0	267	0
SUPPORT	27	OTHER R&D	0	0	0	3847
ADV AUTO	31	HOST COMPUTER	3218	0	0	0
ADV AUTO	32	ADV. AUTOMATION SYSTEMS	121519	0	0	0
ADV AUTO		TOTAL	124737	0	0	0
NAV	35	NAVIGATION	0	0	1593	0
APP/LAND	37	APPROAC-/LAND	1488	0	0	0

R&D DATABASE (cont.)

WEATHER	41	NAS WEATHER	0	0	0	5702
WEATHER	43	DOPPLER	3890	0	0	0
WEATHER	45	WEATHER RADAR	0	0	0	0
WEATHER		TOTAL	3890	0	0	5702
MEDICINE	49	AEROMED. SUPPORT	0	0	0	1170
MEDICINE	51	PROTECT & SURVIVE	0	0	0	2218
MEDICINE	53	WORKFORCE OPT.	0	0	0	1357
MEDICINE	55	HUMAN PERF.	0	0	0	473
MEDICINE		TOTAL	0	0	0	4918
A/C SAFET	57	FIRE SAFETY	3693	0	0	0
A/C SAFET	59	CRASHWORTHINESS	0	0	0	2557
A/C SAFET	61	PROPULSION	0	0	0	3213
A/C SAFET	62	FLIGHT SAFETY	0	0	2555	0
A/C SAFET	64	REG. DEVELOP. SUPPORT	0	0	0	0
A/C SAFET	66	AVIATION SECURITY	17271	0	0	0
A/C SAFETY		TOTAL	20964	0	2555	4772
ENVIRON.	70	A/C EMISSIONS	375	0	0	0
ENVIRON	72	A/C NOISE	0	0	0	1625
ENVIRON		TOTAL	375	0	0	1625
GRAND TOTAL			151990	2354	13990	35566

R&D DATABASE (cont.)

R,E&D 1987 BUDGET 11-Nov-85
464RD88

ACTIVITY	PAGE	PROGRAM	TOTAL DOLLARS(K$) 1988-1992 AIR CARR.	GA	NOT VER	ALL
ATC	3	SYS. ENGIN. INTEG.	0	0	0	33300
ATC	4	SYS. ENGIN. ANAL.	0	0	0	8907
ATC	5	SYS. REQUIRE-MENTS-S-C	0	0	0	1631
ATC	7	SYS. REQUIRE-CAP, SEPAR., NAV	0	0	0	33673
ATC	9	ADVANCED SYS. CONCEPTS	118899	0	0	0
ATC		TOTAL	118899	0	0	57511
BEACON	34(84)	MODE-S SURVEILLANCE	0	0	0	0
NOSER	11	TCAS	0	0	0	0
COM	14	COMMUN.-MISC.	4991	0	0	0
COM	16	COMMUN.-VSCS	0	0	13172	0
COM		TOTAL	4991	0	13172	0
AIRPORT	17	AIRPORT	48589	0	0	0
EN ROUTE	19	EN ROUTE EXPER.	0	0	1271	0
FSS	20	FSS	0	24796	0	0
TERM/TOWE	21	TERM/TOWER	0	0	0	7227
TECH	23	HUMAN FACTORS	0	0	1447	0
TECH	24	ADVANCED TECH	37089	0	0	0
TECH	26	LONG RANGE RESEARCH	0	0	0	122650
TECH		TOTAL	37089	0	1447	122650
SUPPORT	27	OTHER R&D	0	0	0	20799
ADV AUTO	31	HOST COMPUTER	0	0	0	0
ADV AUTO	32	ADV. AUTOMATION SYSTEMS	73684	0	0	0
ADV AUTO		TOTAL	73684	0	0	0
NAV	35	NAVIGATION	0	0	2.225	0
APP/LAND	37	APPROACH/LAND	15335	0	0	0

R&D DATABASE (cont.)

WEATHER	41	NAS WEATHER	0	0	0	31596
WEATHER	43	DOPPLER	10095	0	0	0
WEATHER	45	WEATHER RADAR	22038	0	0	0
WEATHER		TOTAL	32133	0	0	31596
MEDICINE	49	AEROMED. SUPPORT	0	0	0	8122
MEDICINE	51	PROTECT & SURVIVE	0	0	0	13556
MEDICINE	52	WORKFORCE OPT.	0	0	0	3674
MEDICINE	53	HUMAN PERF.	0	0	0	3834
MEDICINE		TOTAL	0	0	0	33786
A/C SAFET	57	FIRE SAFETY	19636	0	0	0
A/C SAFET	59	CRASHWORTHINESS	0	0	0	16826
A/C SAFET	61	PROPULSION	0	0	0	11285
A/C SAFET	62	FLIGHT SAFETY	0	0	14076	0
A/C SAFET	64	REG. DEVELOP. SUPPORT	0	0	0	20653
A/C SAFET	66	AVIATION SECURITY	16586	0	0	0
A/C SAFETY		TOTAL	36422	0	14076	48144
ENVIRON	70	A/C EMISSIONS	3082	0	0	0
ENVIRON	72	A/C NOISE	0	0	0	13936
ENVIRON		TOTAL	3082	0	0	13936
GRAND TOTAL			352194	24796	51191	314651

3.5 Airport Grants

The population of airport grants is segregated into two categories:

- o primary airport grants,
- o all other airport grants.

The former were allocated among passenger air carriers based upon enplanements; this allocation procedure is based upon the 1982 Airport Improvement Program legislation.

The remainder of the airport grants were allocated based upon a sample of grants for each of the remaining airport grant categories:

- o commercial services,
- o reliever,
- o general aviation.

The results of these samples were then extrapolated to the entire population of grants in each of these categories.

It should be noted that each of these grant categories were further segregated into two groups: large and small grants. This procedure was employed to ensure that the sample results would not be dominated by only a few large grants and their allocations.

The following tables show the sample results.

COMMERCIAL SERVICE SAMPLE RESULTS

A/P CATEGORY	A/P NAME	STATE	LOC	GRANT #	PROJECT $	ML	AC-P	AC-F	COM	AT	GA-P	GA-F	[illegible]	ROTOR
CS	MONROE COUNTY	IN	BMG	02-84	$31,500	0.00	0.00	0.00	0.33	0.00	[illegible]	[illegible]	0.00	0.00
CS	BELLINGHAM INTL	WA	BLI	01-84	$63,000	0.03	0.00	0.00	0.16	0.00	0.15	0.61	0.02	0.04
CS	MERCER COUNTY	NJ	TTN	01-83	$70,000	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CS	CHEYENNE	WY	CYS	02-83	$72,000	0.00	0.00	0.00	0.09	0.00	0.49	0.20	[illegible]	0.00
CS	W.K.KELLOGG	MI	BTL	01-82	$73,800	0.24	0.00	0.00	0.00	0.00	0.76	0.00	0.00	0.00
CS	PITT-GREENVILLE	NC	PGV	04-80	$157,350	0.00	0.00	0.00	0.25	0.25	0.25	0.25	0.00	0.00
CS	MERCER COUNTY	NJ	BLF	01-83	$157,500	0.00	0.00	0.00	0.33	0.00	0.33	0.33	0.00	0.00
CS-SMALL	GRANTS=7	TOTAL $			$625,150	3.80%	14.29%	0.00%	15.38%	3.57%	31.77%	30.33%	[illegible]	0.58%
		TOTAL ALLOCATED $			$12,160,434	$462,104	$1,737,112	$0	$1,869,735	$434,303	[illegible]	[illegible]	$23,257	$70,641
CS	PITT-GREENVILLE	NC	PGV	04-80	$160,000	0.00	0.00	0.00	0.25	0.25	0.25	0.25	0.00	0.00
CS	LACONIA MUNI	NH	LCI	03-84	$176,400	0.00	0.00	0.00	0.33	0.00	0.33	0.33	0.00	0.00
CS	MERCER COUNTY	NJ	TTN	01-83	$237,134	0.06	0.01	0.00	0.03	0.02	0.17	0.52	0.03	0.17
CS	LAWRENCE MUNI	KS	3LA	01-82	$230,908	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00
CS	LAWRENCE MUNI	KS	3LA	01-82	$655,452	0.00	0.00	0.00	0.33	0.00	0.33	0.00	0.33	0.00
CS	MORRISTOWN	NJ	MMU	01-83	$766,014	0.02	0.00	0.00	0.00	.00	0.24	0.69	0.00	0.05
CS	LAWRENCE MUNI	KS	3LA	03-80	$1,522,000	0.00	0.00	0.00	0.33	0.00	0.33	0.00	0.33	0.00
CS-LARGE	GRANTS=7	TOTAL $			$3,737,393	1.09%	0.15%	0.00%	18.34%	3.93%	38.11%	25.60%	9.52%	3.19%
		TOTAL ALLOCATED $			$73,877,308	$802,182	$109,174	$0	$13,548,724	$2,943,712	$28,170,163	$18,911,241	$7,035,934	$2,356,178
CS-TOTAL		TOTAL CS $			$86,037,792	$1,264,286	$1,846,386	$0	$15,418,460	$3,378,015	$32,034,003	$22,605,633	$7,064,191	$2,426,819
		% OF TOTAL CS $			100.00%	1.47%	2.15%	0.00%	17.92%	3.93%	37.23%	26.27%	8.21%	2.82%

TOTAL SURVEY $	$4,423,058	% CS-SMALL:	14.13%
		% CS-LARGE:	85.87%
TOTAL CS $	$86,037,792	$ CS-SMALL:	$12,160,434
		$ CS-LARGE:	$73,877,308

RF[illegible] AIRPORT SAMPLE RESULTS

A/P CATEGORY	A/P NAME	STATE	LOC ID	GRANT #	PROJECT $	RL	AC-F	AC-F	COM	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
RL	CHESAPEAKE MUNI	VA	W??	0?-??	$27,000	0.00	0.00	0.00	0.00	0.17	[illegible]	0.75	[illegible]	[illegible]
RL	BUTLER COUNTY	PA	BTP	01-8?	$45,700	0.00	0.00	0.00	0.00	0.50	[illegible]	[illegible]	[illegible]	[illegible]
RL	HARVEY FIELD	WA	S4?	01-84	$6?,292	0.00	0.00	0.00	0.00	0.00	[illegible]	[illegible]	0.00	[illegible]
RL	MCKINNEY MUNI	TX	T??	01-82	$102,000	0.00	0.00	0.00	0.00	0.00	[illegible]	[illegible]	[illegible]	[illegible]
RL	MORRISTOWN	NJ	MMU	02-84	$119,000	0.02	0.00	0.00	0.00	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
RL	SACRAMENTO EXEC	CA	SAC	02-84	$15?,000	0.00	0.00	0.00	0.00	0.00	[illegible]	[illegible]	[illegible]	[illegible]
RL	MORRISTOWN	NJ	MMU	02-84	$177,000	0.02	0.00	0.00	0.00	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
RL	BOEING FIELD	WA	BFI	05-84	$1?0,000	0.00	0.00	0.00	0.00	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
RL	NAPA COUNTY	CA	APC	01-8?	$201,600	0.00	0.00	0.00	0.00	0.00	[illegible]	[illegible]	[illegible]	0.00
RL	DOUBLE EAGLE II	NM	N??	01-8?	$2?1,041	0.00	0.00	0.00	0.00	0.00	[illegible]	[illegible]	[illegible]	0.00
RL	MORRISTOWN	NJ	MMU	02-84	$2?5,000	0.00	0.00	0.00	0.00	0.00	[illegible]	[illegible]	[illegible]	0.00
RL	SALT LAKE MUNI #2	UT	U42	01-8?	$2??,???	0.00	0.00	0.00	0.00	0.00	[illegible]	[illegible]	0.00	0.00
RL-SMALL	GRANTS=12	TOTAL $			$1,??4,944	0.26%	0.00%	0.00%	0.00%	5.62%	[illegible]	55.??%	0.07%	?.22%
		TOTAL ALLOCATED $			$16,254,73?	$42,965	$0	$0	$0	$921,25?	[illegible]	[illegible]	$11,15?	$1,5??,765
RL	MEACHAM FIELD	TX	FTW	05-80	$361,800	0.00	0.00	0.00	0.00	0.00	0.50	0.50	0.00	0.00
RL	PAINE FIELD	WA	PAE	05-80	$394,000	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00
RL	BOWMAN FIELD	KY	LOU	01-82	$450,000	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00
RL	EL MONTE	CA	EMT	01-83	$470,250	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00
RL	SACRAMENTO EXEC	CA	SAC	02-84	$850,000	0.20	0.00	0.00	0.00	0.20	0.20	0.20	0.20	0.00
RL	REID HILLVIEW	CA	RHV	02-84	$900,000	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00
RL	PAINE FIELD	WA	PAE	01-83	$950,000	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00
RL	COL JAMES JABARA	KS	3KM	02-83	$936,069	0.00	0.00	0.00	0.00	0.00	0.00	[illegible]	[illegible]	0.67
RL	COL JAMES JABARA	KS	3KM	01-82	$1,628,000	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00
RL	DOUBLE EAGLE II	NM	N?3	02-8?	$1,973,294	0.00	0.00	0.00	0.00	0.00	0.50	0.50	0.00	0.00
RL	PAL-WAUKEE	IL	PWK	01-84	$5,120,000	0.00	0.00	0.00	0.00	0.00	0.50	0.50	0.00	0.00
RL-LARGE	GRANTS=11	TOTAL $			$15,09?,413	1.32%	0.00%	0.00%	0.00%	1.32%	[illegible]	[illegible]	4.35%	[illegible]
		TOTAL ALLOCATED $			$123,737,601	$2,24?,775	$0	$0	$0	$2,24?,775	[illegible]	[illegible]	[illegible]	[illegible]
RL-TOTAL		TOTAL RL $			$140,0?2,390	$2,292,73?	$0	$0	$0	$3,171,0??	[illegible]	[illegible]	[illegible]	[illegible]
		% OF TOTAL RL $			100.00%	1.64%	0.00%	0.00%	0.00%	2.26%	33.15%	[illegible]	4.2?%	5.43%

TOTAL SURVEY $	$17,0??,?57	% RL-SMALL	11.67%
		% RL-LARGE	88.33%
TOTAL RL $	$140,092,390	$ GA-SMALL	$16,254,739
		$ GA-LARGE	$123,737,601

GA AIRPORT SAMPLE RESULTS

A/P CATEGORY	A/P NAME	STATE	LOC	GRANT #	PROJECT $	ML	AC-P	AC-F	COM	AT	GA-T	GA-P	GOV	ROTOR
GA	YERINGTON MUNI	NV	043	01-82	$8,299	0.00	0.00	0.00	0.00	0.10	0.23	0.67	0.00	0.00
GA	SOUTHER FIELD	GA	ACJ	01-83	$12,330	0.00	0.00	0.00	0.00	0.00	0.50	0.50	0.00	0.00
GA	[illegible]-HOBBY FLD	GA	773	01-82	$13,500	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00
GA	ARCADIA MUNI	FL	X06	01-82	$15,434	0.00	0.00	0.00	0.00	0.00	0.50	0.50	0.00	0.00
GA	YERINGTON MUNI	NV	043	01-82	$20,000	0.00	0.00	0.00	0.00	0.10	0.23	0.67	0.00	0.00
GA	CHAMBERS COUNTY	TX	T00	01-84	$31,500	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00
GA	GREENVILLE MUNI	PA	4G1	01-84	$34,650	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00
GA	FERNANDINA BEACH	FL	55J	01-80	$36,214	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00
GA	OLEAN MUNI	NY	OLE	01-84	$38,126	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00
GA	FERNANDINA BEACH	FL	55J	02-80	$41,313	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00
GA	SIDNEY MUNI	NY	N23	01-82	$45,600	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00
GA	HOLLISTER MUNI	CA	307	01-84	$47,500	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00
GA	FERNANDINA BEACH	FL	55J	02-80	$55,250	0.00	0.00	0.00	0.00	0.00	0.50	0.50	0.00	0.00
GA	OLEAN MUNI	NY	OLE	01-84	$57,135	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00
GA	PADGHAM FIELD	MI	35D	01-82	$58,153	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00
GA	YERINGTON MUNI	NV	043	01-83	$60,000	0.00	0.00	0.00	0.00	0.00	0.50	0.50	0.00	0.00
GA	PEARSON AIRPARK	WA	VUO	01-84	$72,000	0.00	0.00	0.00	0.00	0.50	0.50	0.00	0.00	0.00
GA	CHANDLER MEMORIAL	AZ	L07	01-83	$94,702	0.00	0.00	0.00	0.00	0.00	0.50	0.50	0.00	0.00
GA	HARNETT COUNTY	NC	37W	01-83	$102,313	0.00	0.00	0.00	0.00	0.00	0.50	0.50	0.00	0.00
GA	OCEAN SHORES MUNI	WA	S26	01-82	$144,000	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00
GA	BEAUREGARD PARISH	LA	DRI	01-82	$145,000	0.35	0.00	0.00	0.00	0.00	0.65	0.00	0.00	0.00
GA	YERINGTON MUNI	NV	043	01-82	$150,000	0.00	0.00	0.00	0.00	0.33	0.33	0.33	0.00	0.00
GA	AFTON	WY	AFO	02-84	$157,500	0.00	0.00	0.00	0.00	0.00	0.33	0.33	0.33	0.00
GA	SHELBYVILLE MUNI	TN	SYI	01-84	$159,727	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00
GA	GREATER KANKAKEE	IL	IKK	02-84	$180,000	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00
GA	CONNELLSVILLE	PA	2G2	03-80	$188,370	0.00	0.00	0.00	0.00	0.00	0.50	0.50	0.00	0.00
GA	NEIL ARMSTRONG	OH	AXV	02-84	$200,000	0.00	0.00	0.00	0.00	0.33	0.33	0.33	0.00	0.00
GA-SMALL	GRANTS=27	TOTAL $			$2,185,774	1.30%	0.00%	0.00%	0.00%	5.06%	41.11%	51.30%	1.23%	0.00%
		TOTAL ALLOCATED $			$22,917,625	$293,227	$0	$0	$0	$1,160,023	$9,420,543	$11,755,393	$282,934	$0
GA	PENN VALLEY	PA	SEG	02-80	$125,720	0.00	0.00	0.00	0.00	0.00	0.50	0.50	0.00	0.00
GA	SOUTHER FIELD	GA	ACJ	01-83	$233,745	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00
GA	HENRY COUNTY	TN	PHT	01-82	$246,117	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00
GA	BERKELEY COUNTY	SC	50J	01-83	$246,599	0.00	0.00	0.00	0.00	0.00	0.50	0.50	0.00	0.00
GA	CRESTVIEW-B.SIKES	FL	CEW	01-84	$302,330	0.00	0.00	0.00	0.00	0.00	0.50	0.50	0.00	0.00
GA	CRESTVIEW-B.SIKES	FL	CEW	01-84	$310,139	0.00	0.00	0.00	0.00	0.00	0.50	0.50	0.00	0.00
GA	OCEAN SHORES MUNI	WA	S16	01-82	$315,000	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00
GA	MURRAY-CALLOWAY CO	KY	CEY	01-84	$322,132	0.00	0.00	0.00	0.00	0.00	0.50	0.50	0.00	0.00
GA	ASHTABULA COUNTY	OH	7D2	01-80	$335,000	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00
GA	GRANBURY MUNI	TX	F55	01-[illegible]	$345,357	0.00	0.00	0.00	0.00	0.00	0.50	0.50	0.00	0.00
GA	WEST WOODWARD	OK	WWR	01-83	$400,000	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00
GA	HARNETT COUNTY	NC	37W	01-83	$417,606	0.00	0.00	0.00	0.00	0.00	0.01	0.80	0.10	0.09
GA	ROGERS MUNI	AR	ROG	01-82	$425,043	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00
GA	ARCADIA MUNI	FL	X06	01-82	$479,043	0.00	0.00	0.00	0.00	0.00	0.50	0.50	0.00	0.00
GA	HUTCHINSON COUNTY	TX	BGD	01-80	$517,000	0.00	0.00	0.00	0.00	0.33	0.33	0.33	0.00	0.00
GA	PADGHAM FIELD	MI	35D	01-82	$523,422	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00
GA	SHELBYVILLE MUNI	TN	SYI	01-84	$533,607	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00
GA	INDEPENDENCE MUNI	IA	6I2	01-82	$547,524	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00
GA	HAVRE CITY-CNTY	MT	HVR	01-84	$548,000	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00
GA	PENDER MUNI	NE	NE11	01-83	$555,300	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00
GA	FREDERICK MUNI	MD	FDK	04-80	$589,112	0.00	0.00	0.00	0.00	0.00	0.50	0.50	0.00	0.00
GA	LINCOLN MUNI	CA	2F1	01-83	$860,000	0.00	0.00	0.00	0.00	0.00	0.20	0.80	0.00	0.00
GA	KELSO-LONGVIEW	WA	KLS	01-83	$921,240	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00
GA	BARNES MUNI	MA	BAF	03-84	$1,141,200	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00
GA	CLARK COUNTY	IN	JVY	03-80	$1,600,000	0.00	0.00	0.00	0.00	0.33	0.33	0.33	0.00	0.00
GA	[illegible]	WA	S[illegible]	01-84	$4,250,900	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00

A/P CATEGORY	A/P NAME	STATE	LOC	GRANT #	PROJECT $	ML	AC-P	AC-F	COM	AT	GA-T	GA-P	GOV	ROTOR
GA-LARGE	GRANTS=26	TOTAL $			$17,212,186	0.00%	0.00%	0.00%	3.85%	2.56%	34.14%	58.72%	0.38%	0.35%
		TOTAL ALLOCATED $			$180,468,071	$0	$0	$0	$6,941,060	$4,627,386	$61,613,650	$105,967,149	$694,108	$624,697
GA-TOTAL		GA $			$203,385,696	$293,227	$0	$0	$6,941,080	$5,787,414	$71,034,194	$117,723,042	$977,042	$624,697
		% OF GA TOTAL			100.00%	0.15%	0.00%	0.00%	3.41%	2.85%	34.93%	57.88%	0.46%	0.31%

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